

$\chi_{c0}(1P)$

$$I^G(J^{PC}) = 0^+(0^{++})$$

NODE=M056

### $\chi_{c0}(1P)$ MASS

NODE=M056M

NODE=M056M

| VALUE (MeV)                                                                   | EVTS | DOCUMENT ID             | TECN      | COMMENT                                                         |
|-------------------------------------------------------------------------------|------|-------------------------|-----------|-----------------------------------------------------------------|
| <b>3414.71 ± 0.30 OUR AVERAGE</b>                                             |      |                         |           |                                                                 |
| 3413.0 ± 1.9 ± 0.6                                                            | 933  | <sup>1</sup> AAIJ       | 17BB LHCb | $pp \rightarrow b\bar{b}X \rightarrow 2(K^+K^-)X$               |
| 3414.2 ± 0.5 ± 2.3                                                            | 5.4k | UEHARA                  | 08 BELL   | $\gamma\gamma \rightarrow \chi_{c0} \rightarrow \text{hadrons}$ |
| 3406 ± 7 ± 6                                                                  | 230  | <sup>2</sup> ABE        | 07 BELL   | $e^+e^- \rightarrow J/\psi(c\bar{c})$                           |
| 3414.21 ± 0.39 ± 0.27                                                         |      | ABLIKIM                 | 05G BES2  | $\psi(2S) \rightarrow \gamma\chi_{c0}$                          |
| 3414.7 $^{+0.7}_{-0.6}$ ± 0.2                                                 |      | <sup>3</sup> ANDREOTTI  | 03 E835   | $\bar{p}p \rightarrow \chi_{c0} \rightarrow \pi^0\pi^0$         |
| 3415.5 ± 0.4 ± 0.4                                                            | 392  | <sup>4</sup> BAGNASCO   | 02 E835   | $\bar{p}p \rightarrow \chi_{c0} \rightarrow J/\psi\gamma$       |
| 3417.4 $^{+1.8}_{-1.9}$ ± 0.2                                                 |      | <sup>3</sup> AMBROGIANI | 99B E835  | $\bar{p}p \rightarrow e^+e^-\gamma$                             |
| 3414.1 ± 0.6 ± 0.8                                                            |      | BAI                     | 99B BES   | $\psi(2S) \rightarrow \gamma X$                                 |
| 3417.8 ± 0.4 ± 4                                                              |      | <sup>3</sup> GAISER     | 86 CBAL   | $\psi(2S) \rightarrow \gamma X$                                 |
| 3416 ± 3 ± 4                                                                  |      | <sup>5</sup> TANENBAUM  | 78 MRK1   | $e^+e^-$                                                        |
| • • • We do not use the following data for averages, fits, limits, etc. • • • |      |                         |           |                                                                 |
| 3414.6 ± 1.1                                                                  | 266  | UEHARA                  | 13 BELL   | $\gamma\gamma \rightarrow K_S^0 K_S^0$                          |
| 3416.5 ± 3.0                                                                  |      | EISENSTEIN              | 01 CLE2   | $e^+e^- \rightarrow e^+e^-\chi_{c0}$                            |
| 3422 ± 10                                                                     |      | <sup>5</sup> BARTEL     | 78B CNTR  | $e^+e^- \rightarrow J/\psi 2\gamma$                             |
| 3415 ± 9                                                                      |      | <sup>5</sup> BIDDICK    | 77 CNTR   | $e^+e^- \rightarrow \gamma X$                                   |

<sup>1</sup> From a fit of the  $\phi\phi$  invariant mass with the width of  $\chi_{c0}(1P)$  fixed to the PDG 16 value.

<sup>2</sup> From a fit of the  $J/\psi$  recoil mass spectrum. Supersedes ABE,K 02 and ABE 04G.

<sup>3</sup> Using mass of  $\psi(2S) = 3686.0$  MeV.

<sup>4</sup> Recalculated by ANDREOTTI 05A, using the value of  $\psi(2S)$  mass from AULCHENKO 03.

<sup>5</sup> Mass value shifted by us by amount appropriate for  $\psi(2S)$  mass = 3686 MeV and  $J/\psi(1S)$  mass = 3097 MeV.

NODE=M056M;LINKAGE=A

NODE=M056M;LINKAGE=EB

NODE=M056M;LINKAGE=C

NODE=M056M;LINKAGE=NW

NODE=M056M;LINKAGE=D

### $\chi_{c0}(1P)$ WIDTH

NODE=M056W

NODE=M056W

| VALUE (MeV)                                                                   | EVTS | DOCUMENT ID           | TECN     | COMMENT                                                         |
|-------------------------------------------------------------------------------|------|-----------------------|----------|-----------------------------------------------------------------|
| <b>10.9 ± 0.6 OUR FIT</b> Error includes scale factor of 1.1.                 |      |                       |          |                                                                 |
| <b>10.5 ± 0.8 OUR AVERAGE</b> Error includes scale factor of 1.1.             |      |                       |          |                                                                 |
| 10.6 ± 1.9 ± 2.6                                                              | 5.4k | UEHARA                | 08 BELL  | $\gamma\gamma \rightarrow \chi_{c0} \rightarrow \text{hadrons}$ |
| 12.6 $^{+1.5+0.9}_{-1.6-1.1}$                                                 |      | ABLIKIM               | 05G BES2 | $\psi(2S) \rightarrow \gamma\chi_{c0}$                          |
| 8.6 $^{+1.7}_{-1.3}$ ± 0.1                                                    |      | ANDREOTTI             | 03 E835  | $\bar{p}p \rightarrow \chi_{c0} \rightarrow \pi^0\pi^0$         |
| 9.7 ± 1.0                                                                     | 392  | <sup>1</sup> BAGNASCO | 02 E835  | $\bar{p}p \rightarrow \chi_{c0} \rightarrow J/\psi\gamma$       |
| 16.6 $^{+5.2}_{-3.7}$ ± 0.1                                                   |      | AMBROGIANI            | 99B E835 | $\bar{p}p \rightarrow e^+e^-\gamma$                             |
| 14.3 ± 2.0 ± 3.0                                                              |      | BAI                   | 98I BES  | $\psi(2S) \rightarrow \gamma\pi^+\pi^-$                         |
| 13.5 ± 3.3 ± 4.2                                                              |      | GAISER                | 86 CBAL  | $\psi(2S) \rightarrow \gamma X, \gamma\pi^0\pi^0$               |
| • • • We do not use the following data for averages, fits, limits, etc. • • • |      |                       |          |                                                                 |
| 13.2 ± 2.1                                                                    | 266  | UEHARA                | 13 BELL  | $\gamma\gamma \rightarrow K_S^0 K_S^0$                          |

<sup>1</sup> Recalculated by ANDREOTTI 05A.

NODE=M056W;LINKAGE=AN

### $\chi_{c0}(1P)$ DECAY MODES

NODE=M056215;NODE=M056

| Mode                                        | Fraction ( $\Gamma_i/\Gamma$ ) | Scale factor/<br>Confidence level |
|---------------------------------------------|--------------------------------|-----------------------------------|
| <b>Hadronic decays</b>                      |                                |                                   |
| $\Gamma_1$ $2(\pi^+\pi^-)$                  | (2.18 ± 0.11) %                | S=1.2                             |
| $\Gamma_2$ $\rho^0\pi^+\pi^-$               | (8.5 ± 2.7) × 10 <sup>-3</sup> |                                   |
| $\Gamma_3$ $\rho^0\rho^0$                   |                                |                                   |
| $\Gamma_4$ $f_0(980)f_0(980)$               | (6.7 ± 2.1) × 10 <sup>-4</sup> |                                   |
| $\Gamma_5$ $\pi^+\pi^-\pi^0\pi^0$           | (3.3 ± 0.4) %                  |                                   |
| $\Gamma_6$ $\rho^+\pi^-\pi^0 + \text{c.c.}$ | (2.9 ± 0.4) %                  |                                   |
| $\Gamma_7$ $4\pi^0$                         | (3.3 ± 0.4) × 10 <sup>-3</sup> |                                   |
| $\Gamma_8$ $\pi^+\pi^-K^+K^-$               | (1.81 ± 0.16) %                | S=1.2                             |

NODE=M056;CLUMP=A

DESIG=3

DESIG=9

DESIG=54

DESIG=20

DESIG=61

DESIG=62

DESIG=70

DESIG=5

|               |                                                                                   |                                          |        |           |
|---------------|-----------------------------------------------------------------------------------|------------------------------------------|--------|-----------|
| $\Gamma_9$    | $K_0^*(1430)^0 \bar{K}_0^*(1430)^0 \rightarrow \pi^+ \pi^- K^+ K^-$               | $(9.9 \pm_{-2.8}^{+4.0}) \times 10^{-4}$ |        | DESIG=31  |
| $\Gamma_{10}$ | $K_0^*(1430)^0 \bar{K}_2^*(1430)^0 + \text{c.c.} \rightarrow \pi^+ \pi^- K^+ K^-$ | $(8.0 \pm_{-2.4}^{+2.0}) \times 10^{-4}$ |        | DESIG=32  |
| $\Gamma_{11}$ | $K_1(1270)^+ K^- + \text{c.c.} \rightarrow \pi^+ \pi^- K^+ K^-$                   | $(6.3 \pm 1.9) \times 10^{-3}$           |        | DESIG=33  |
| $\Gamma_{12}$ | $K_1(1400)^+ K^- + \text{c.c.} \rightarrow \pi^+ \pi^- K^+ K^-$                   | $< 2.7 \times 10^{-3}$                   | CL=90% | DESIG=34  |
| $\Gamma_{13}$ | $f_0(980) f_0(980)$                                                               | $(1.6 \pm_{-0.9}^{+1.0}) \times 10^{-4}$ |        | DESIG=23  |
| $\Gamma_{14}$ | $f_0(980) f_0(2200)$                                                              | $(8.0 \pm_{-2.5}^{+2.0}) \times 10^{-4}$ |        | DESIG=24  |
| $\Gamma_{15}$ | $f_0(1370) f_0(1370)$                                                             | $< 2.7 \times 10^{-4}$                   | CL=90% | DESIG=25  |
| $\Gamma_{16}$ | $f_0(1370) f_0(1500)$                                                             | $< 1.7 \times 10^{-4}$                   | CL=90% | DESIG=26  |
| $\Gamma_{17}$ | $f_0(1370) f_0(1710)$                                                             | $(6.7 \pm_{-2.3}^{+3.5}) \times 10^{-4}$ |        | DESIG=27  |
| $\Gamma_{18}$ | $f_0(1500) f_0(1370)$                                                             | $< 1.3 \times 10^{-4}$                   | CL=90% | DESIG=28  |
| $\Gamma_{19}$ | $f_0(1500) f_0(1500)$                                                             | $< 5 \times 10^{-5}$                     | CL=90% | DESIG=29  |
| $\Gamma_{20}$ | $f_0(1500) f_0(1710)$                                                             | $< 7 \times 10^{-5}$                     | CL=90% | DESIG=30  |
| $\Gamma_{21}$ | $K^+ K^- \pi^+ \pi^- \pi^0$                                                       | $(8.6 \pm 0.9) \times 10^{-3}$           |        | DESIG=75  |
| $\Gamma_{22}$ | $K_S^0 K^\pm \pi^\mp \pi^+ \pi^-$                                                 | $(4.2 \pm 0.4) \times 10^{-3}$           |        | DESIG=87  |
| $\Gamma_{23}$ | $K^+ K^- \pi^0 \pi^0$                                                             | $(5.6 \pm 0.9) \times 10^{-3}$           |        | DESIG=63  |
| $\Gamma_{24}$ | $K^+ \pi^- \bar{K}^0 \pi^0 + \text{c.c.}$                                         | $(2.50 \pm 0.33) \%$                     |        | DESIG=65  |
| $\Gamma_{25}$ | $\rho^+ K^- K^0 + \text{c.c.}$                                                    | $(1.21 \pm 0.21) \%$                     |        | DESIG=66  |
| $\Gamma_{26}$ | $K^*(892)^- K^+ \pi^0 \rightarrow K^+ \pi^- \bar{K}^0 \pi^0 + \text{c.c.}$        | $(4.6 \pm 1.2) \times 10^{-3}$           |        | DESIG=67  |
| $\Gamma_{27}$ | $K_S^0 K_S^0 \pi^+ \pi^-$                                                         | $(5.7 \pm 1.1) \times 10^{-3}$           |        | DESIG=41  |
| $\Gamma_{28}$ | $K^+ K^- \eta \pi^0$                                                              | $(3.0 \pm 0.7) \times 10^{-3}$           |        | DESIG=68  |
| $\Gamma_{29}$ | $3(\pi^+ \pi^-)$                                                                  | $(1.96 \pm 0.22) \%$                     | S=3.4  | DESIG=4   |
| $\Gamma_{30}$ | $K^+ \bar{K}^*(892)^0 \pi^- + \text{c.c.}$                                        | $(7.4 \pm 1.6) \times 10^{-3}$           |        | DESIG=10  |
| $\Gamma_{31}$ | $K^*(892)^0 \bar{K}^*(892)^0$                                                     | $(1.7 \pm 0.6) \times 10^{-3}$           |        | DESIG=21  |
| $\Gamma_{32}$ | $\pi \pi$                                                                         | $(8.6 \pm 0.4) \times 10^{-3}$           | S=1.2  | DESIG=18  |
| $\Gamma_{33}$ | $\pi^0 \eta$                                                                      | $< 1.8 \times 10^{-4}$                   |        | DESIG=35  |
| $\Gamma_{34}$ | $\pi^0 \eta'$                                                                     | $< 1.1 \times 10^{-3}$                   |        | DESIG=36  |
| $\Gamma_{35}$ | $\pi^0 \eta_c$                                                                    | $< 1.6 \times 10^{-3}$                   | CL=90% | DESIG=86  |
| $\Gamma_{36}$ | $\eta \eta$                                                                       | $(3.02 \pm 0.25) \times 10^{-3}$         | S=1.3  | DESIG=13  |
| $\Gamma_{37}$ | $\eta \eta'$                                                                      | $(9.1 \pm 1.1) \times 10^{-5}$           |        | DESIG=37  |
| $\Gamma_{38}$ | $\eta' \eta'$                                                                     | $(2.18 \pm 0.12) \times 10^{-3}$         |        | DESIG=46  |
| $\Gamma_{39}$ | $\omega \omega$                                                                   | $(9.7 \pm 1.1) \times 10^{-4}$           |        | DESIG=22  |
| $\Gamma_{40}$ | $\omega \phi$                                                                     | $(1.42 \pm 0.13) \times 10^{-4}$         |        | DESIG=76  |
| $\Gamma_{41}$ | $\omega K^+ K^-$                                                                  | $(1.94 \pm 0.21) \times 10^{-3}$         |        | DESIG=88  |
| $\Gamma_{42}$ | $K^+ K^-$                                                                         | $(6.07 \pm 0.33) \times 10^{-3}$         | S=1.1  | DESIG=2   |
| $\Gamma_{43}$ | $K_S^0 K_S^0$                                                                     | $(3.18 \pm 0.19) \times 10^{-3}$         | S=1.1  | DESIG=15  |
| $\Gamma_{44}$ | $\pi^+ \pi^- \eta$                                                                | $< 2.0 \times 10^{-4}$                   | CL=90% | DESIG=50  |
| $\Gamma_{45}$ | $\pi^+ \pi^- \eta'$                                                               | $< 4 \times 10^{-4}$                     | CL=90% | DESIG=53  |
| $\Gamma_{46}$ | $\bar{K}^0 K^+ \pi^- + \text{c.c.}$                                               | $< 9 \times 10^{-5}$                     | CL=90% | DESIG=17  |
| $\Gamma_{47}$ | $K^+ K^- \pi^0$                                                                   | $< 6 \times 10^{-5}$                     | CL=90% | DESIG=47  |
| $\Gamma_{48}$ | $K^+ K^- \eta$                                                                    | $< 2.3 \times 10^{-4}$                   | CL=90% | DESIG=51  |
| $\Gamma_{49}$ | $K^+ K^- K_S^0 K_S^0$                                                             | $(1.4 \pm 0.5) \times 10^{-3}$           |        | DESIG=42  |
| $\Gamma_{50}$ | $K_S^0 K_S^0 K_S^0 K_S^0$                                                         | $(5.8 \pm 0.5) \times 10^{-4}$           |        | DESIG=94  |
| $\Gamma_{51}$ | $K^+ K^- K^+ K^-$                                                                 | $(2.8 \pm 0.4) \times 10^{-3}$           | S=1.5  | DESIG=14  |
| $\Gamma_{52}$ | $K^+ K^- \phi$                                                                    | $(9.7 \pm 2.5) \times 10^{-4}$           |        | DESIG=44  |
| $\Gamma_{53}$ | $\bar{K}^0 K^+ \pi^- \phi + \text{c.c.}$                                          | $(3.7 \pm 0.6) \times 10^{-3}$           |        | DESIG=91  |
| $\Gamma_{54}$ | $K^+ K^- \pi^0 \phi$                                                              | $(1.90 \pm 0.35) \times 10^{-3}$         |        | DESIG=92  |
| $\Gamma_{55}$ | $3(K^+ K^-)$                                                                      | $(1.08 \pm 0.22) \times 10^{-5}$         |        | DESIG=106 |
| $\Gamma_{56}$ | $\phi \pi^+ \pi^- \pi^0$                                                          | $(1.18 \pm 0.15) \times 10^{-3}$         |        | DESIG=89  |
| $\Gamma_{57}$ | $\phi \phi$                                                                       | $(8.48 \pm 0.31) \times 10^{-4}$         |        | DESIG=16  |
| $\Gamma_{58}$ | $\phi \phi \eta$                                                                  | $(8.4 \pm 1.0) \times 10^{-4}$           |        | DESIG=96  |
| $\Gamma_{59}$ | $p \bar{p}$                                                                       | $(2.21 \pm 0.14) \times 10^{-4}$         | S=1.6  | DESIG=11  |

|                 |                                                  |                                  |        |           |
|-----------------|--------------------------------------------------|----------------------------------|--------|-----------|
| Г <sub>60</sub> | $p\bar{p}\pi^0$                                  | $(7.0 \pm 0.7) \times 10^{-4}$   | S=1.3  | DESIG=48  |
| Г <sub>61</sub> | $p\bar{p}\eta$                                   | $(3.6 \pm 0.4) \times 10^{-4}$   |        | DESIG=52  |
| Г <sub>62</sub> | $p\bar{p}\omega$                                 | $(5.3 \pm 0.6) \times 10^{-4}$   |        | DESIG=69  |
| Г <sub>63</sub> | $p\bar{p}\phi$                                   | $(6.0 \pm 1.4) \times 10^{-5}$   |        | DESIG=74  |
| Г <sub>64</sub> | $p\bar{p}\pi^+\pi^-$                             | $(2.1 \pm 0.7) \times 10^{-3}$   | S=1.4  | DESIG=8   |
| Г <sub>65</sub> | $p\bar{p}\pi^0\pi^0$                             | $(1.04 \pm 0.28) \times 10^{-3}$ |        | DESIG=64  |
| Г <sub>66</sub> | $p\bar{p}K^+K^-$ (non-resonant)                  | $(1.22 \pm 0.26) \times 10^{-4}$ |        | DESIG=71  |
| Г <sub>67</sub> | $p\bar{p}K_S^0 K_S^0$                            | $< 8.8 \times 10^{-4}$           | CL=90% | DESIG=40  |
| Г <sub>68</sub> | $p\bar{p}K_S^0 K^- \pi^+ + \text{c.c.}$          | $(2.6 \pm 0.4) \times 10^{-5}$   |        | DESIG=107 |
| Г <sub>69</sub> | $p\bar{n}\pi^-$                                  | $(1.27 \pm 0.11) \times 10^{-3}$ |        | DESIG=43  |
| Г <sub>70</sub> | $\bar{p}n\pi^+$                                  | $(1.37 \pm 0.12) \times 10^{-3}$ |        | DESIG=82  |
| Г <sub>71</sub> | $p\bar{n}\pi^-\pi^0$                             | $(2.35 \pm 0.21) \times 10^{-3}$ |        | DESIG=83  |
| Г <sub>72</sub> | $\bar{p}n\pi^+\pi^0$                             | $(2.22 \pm 0.19) \times 10^{-3}$ |        | DESIG=84  |
| Г <sub>73</sub> | $\Lambda\bar{\Lambda}$                           | $(3.61 \pm 0.16) \times 10^{-4}$ | S=1.1  | DESIG=19  |
| Г <sub>74</sub> | $\Lambda\bar{\Lambda}\pi^+\pi^-$                 | $(1.18 \pm 0.13) \times 10^{-3}$ |        | DESIG=38  |
| Г <sub>75</sub> | $\Lambda\bar{\Lambda}\pi^+\pi^-$ (non-resonant)  | $< 5 \times 10^{-4}$             | CL=90% | DESIG=77  |
| Г <sub>76</sub> | $\Sigma(1385)^+\bar{\Lambda}\pi^- + \text{c.c.}$ | $< 5 \times 10^{-4}$             | CL=90% | DESIG=78  |
| Г <sub>77</sub> | $\Sigma(1385)^-\bar{\Lambda}\pi^+ + \text{c.c.}$ | $< 5 \times 10^{-4}$             | CL=90% | DESIG=79  |
| Г <sub>78</sub> | $\Lambda\bar{\Lambda}\eta$                       | $(2.3 \pm 0.4) \times 10^{-4}$   |        | DESIG=102 |
| Г <sub>79</sub> | $\Lambda\bar{\Lambda}\omega$                     | $(2.38 \pm 0.34) \times 10^{-4}$ |        | DESIG=105 |
| Г <sub>80</sub> | $\Lambda\bar{\Lambda}\phi$                       | $(3.0 \pm 1.3) \times 10^{-5}$   |        | DESIG=104 |
| Г <sub>81</sub> | $K^+\bar{p}\Lambda + \text{c.c.}$                | $(1.25 \pm 0.12) \times 10^{-3}$ | S=1.3  | DESIG=49  |
| Г <sub>82</sub> | $nK_S^0\bar{\Lambda} + \text{c.c.}$              | $(6.7 \pm 0.5) \times 10^{-4}$   |        | DESIG=101 |
| Г <sub>83</sub> | $K^*(892)^+\bar{p}\Lambda + \text{c.c.}$         | $(4.8 \pm 0.9) \times 10^{-4}$   |        | DESIG=98  |
| Г <sub>84</sub> | $K^+\bar{p}\Lambda(1520) + \text{c.c.}$          | $(3.0 \pm 0.8) \times 10^{-4}$   |        | DESIG=72  |
| Г <sub>85</sub> | $\bar{p}\Lambda(1520)K_S^0\pi^+ + \text{c.c.}$   | $(1.6 \pm 0.7) \times 10^{-5}$   |        | DESIG=108 |
| Г <sub>86</sub> | $\Lambda(1520)\bar{\Lambda}(1520)$               | $(3.1 \pm 1.2) \times 10^{-4}$   |        | DESIG=73  |
| Г <sub>87</sub> | $\Sigma^0\bar{\Sigma}^0$                         | $(4.70 \pm 0.32) \times 10^{-4}$ |        | DESIG=58  |
| Г <sub>88</sub> | $\Sigma^+\bar{p}K_S^0 + \text{c.c.}$             | $(3.54 \pm 0.27) \times 10^{-4}$ |        | DESIG=97  |
| Г <sub>89</sub> | $\Sigma^0\bar{p}K^+ + \text{c.c.}$               | $(3.05 \pm 0.20) \times 10^{-4}$ |        | DESIG=100 |
| Г <sub>90</sub> | $\Sigma^+\bar{\Sigma}^-$                         | $(4.7 \pm 0.8) \times 10^{-4}$   | S=2.6  | DESIG=59  |
| Г <sub>91</sub> | $\Sigma^+\bar{\Sigma}^-\eta$                     | $(1.27 \pm 0.24) \times 10^{-4}$ |        | DESIG=109 |
| Г <sub>92</sub> | $\Sigma^-\bar{\Sigma}^+$                         | $(5.2 \pm 0.5) \times 10^{-4}$   |        | DESIG=99  |
| Г <sub>93</sub> | $\Sigma(1385)^+\bar{\Sigma}(1385)^-$             | $(1.6 \pm 0.6) \times 10^{-4}$   |        | DESIG=80  |
| Г <sub>94</sub> | $\Sigma(1385)^-\bar{\Sigma}(1385)^+$             | $(2.3 \pm 0.7) \times 10^{-4}$   |        | DESIG=81  |
| Г <sub>95</sub> | $K^-\Lambda\bar{\Xi}^+ + \text{c.c.}$            | $(1.95 \pm 0.35) \times 10^{-4}$ |        | DESIG=85  |
| Г <sub>96</sub> | $\Xi^0\bar{\Xi}^0$                               | $(4.5 \pm 0.5) \times 10^{-4}$   | S=1.7  | DESIG=60  |
| Г <sub>97</sub> | $\Xi^-\bar{\Xi}^+$                               | $(4.48 \pm 0.20) \times 10^{-4}$ |        | DESIG=39  |
| Г <sub>98</sub> | $\Omega^-\bar{\Omega}^+$                         | $(3.5 \pm 0.6) \times 10^{-5}$   |        | DESIG=103 |
| Г <sub>99</sub> | $\eta_c\pi^+\pi^-$                               | $< 7 \times 10^{-4}$             | CL=90% | DESIG=90  |

**Radiative decays**

|                  |                         |                                  |        |                              |
|------------------|-------------------------|----------------------------------|--------|------------------------------|
| Г <sub>100</sub> | $\gamma J/\psi(1S)$     | $(1.41 \pm 0.09) \%$             | S=1.7  | NODE=M056;CLUMP=B<br>DESIG=6 |
| Г <sub>101</sub> | $\gamma\rho^0$          | $< 9 \times 10^{-6}$             | CL=90% | DESIG=55                     |
| Г <sub>102</sub> | $\gamma\omega$          | $< 8 \times 10^{-6}$             | CL=90% | DESIG=56                     |
| Г <sub>103</sub> | $\gamma\phi$            | $< 6 \times 10^{-6}$             | CL=90% | DESIG=57                     |
| Г <sub>104</sub> | $\gamma\gamma$          | $(2.06 \pm 0.10) \times 10^{-4}$ | S=1.1  | DESIG=7                      |
| Г <sub>105</sub> | $e^+e^- J/\psi(1S)$     | $(1.34 \pm 0.30) \times 10^{-4}$ |        | DESIG=93                     |
| Г <sub>106</sub> | $\mu^+\mu^- J/\psi(1S)$ | $< 1.9 \times 10^{-5}$           | CL=90% | DESIG=95                     |

## CONSTRAINED FIT INFORMATION

A multiparticle fit to  $\chi_{c1}(1P)$ ,  $\chi_{c0}(1P)$ ,  $\chi_{c2}(1P)$ , and  $\psi(2S)$  with 4 total widths, a partial width, 25 combinations of partial widths obtained from integrated cross section, and 88 branching ratios uses 255 measurements to determine 49 parameters. The overall fit has a  $\chi^2 = 393.1$  for 206 degrees of freedom.

The following *off-diagonal* array elements are the correlation coefficients  $\langle \delta p_i \delta p_j \rangle / (\delta p_i \cdot \delta p_j)$ , in percent, from the fit to parameters  $p_i$ , including the branching fractions,  $x_i \equiv \Gamma_i / \Gamma_{\text{total}}$ .

|           |       |       |       |          |          |          |          |          |          |          |
|-----------|-------|-------|-------|----------|----------|----------|----------|----------|----------|----------|
| $x_2$     | 15    |       |       |          |          |          |          |          |          |          |
| $x_8$     | 10    | 1     |       |          |          |          |          |          |          |          |
| $x_{30}$  | 4     | 1     | 33    |          |          |          |          |          |          |          |
| $x_{32}$  | 21    | 3     | 9     | 3        |          |          |          |          |          |          |
| $x_{36}$  | 13    | 2     | 5     | 1        | 13       |          |          |          |          |          |
| $x_{42}$  | 19    | 3     | 8     | 3        | 20       | 12       |          |          |          |          |
| $x_{43}$  | 19    | 3     | 8     | 3        | 19       | 11       | 17       |          |          |          |
| $x_{51}$  | 7     | 1     | 5     | 3        | 6        | 3        | 6        | 5        |          |          |
| $x_{57}$  | 5     | 1     | 3     | 1        | 4        | 3        | 4        | 4        | 2        |          |
| $x_{59}$  | 6     | 1     | 2     | 1        | 0        | 1        | 5        | 5        | 2        | 1        |
| $x_{73}$  | 24    | 4     | 9     | 3        | 24       | 15       | 22       | 21       | 6        | 5        |
| $x_{100}$ | 6     | 1     | 2     | 1        | 8        | 5        | 6        | 5        | 1        | 1        |
| $x_{104}$ | 11    | 2     | -4    | -4       | 14       | 9        | 11       | 12       | -1       | 1        |
| $\Gamma$  | -19   | -3    | -21   | -11      | -16      | -8       | -16      | -14      | -12      | -7       |
|           | $x_1$ | $x_2$ | $x_8$ | $x_{30}$ | $x_{32}$ | $x_{36}$ | $x_{42}$ | $x_{43}$ | $x_{51}$ | $x_{57}$ |

|           |          |          |           |           |
|-----------|----------|----------|-----------|-----------|
| $x_{73}$  | 7        |          |           |           |
| $x_{100}$ | -37      | 7        |           |           |
| $x_{104}$ | 3        | 17       | 8         |           |
| $\Gamma$  | -3       | -15      | -5        | -43       |
|           | $x_{59}$ | $x_{73}$ | $x_{100}$ | $x_{104}$ |

### $\chi_{c0}(1P)$ PARTIAL WIDTHS

$$\chi_{c0}(1P) \Gamma(i) \Gamma(\gamma\gamma) / \Gamma(\text{total})$$

NODE=M056217

NODE=M056224

$$\Gamma(2(\pi^+\pi^-)) \times \Gamma(\gamma\gamma) / \Gamma_{\text{total}} \quad \Gamma_1 \Gamma_{104} / \Gamma$$

VALUE (eV) EVTS DOCUMENT ID TECN COMMENT

**48.7 ± 3.5 OUR FIT** Error includes scale factor of 1.2.

**49 ± 10 OUR AVERAGE** Error includes scale factor of 1.8.

44.7 ± 3.6 ± 4.9 3.6k UEHARA 08 BELL  $\gamma\gamma \rightarrow \chi_{c0} \rightarrow 2(\pi^+\pi^-)$

75 ± 13 ± 8 EISENSTEIN 01 CLE2  $e^+e^- \rightarrow e^+e^-\chi_{c0}$

NODE=M056G2  
NODE=M056G2

$$\Gamma(\rho^0\rho^0) \times \Gamma(\gamma\gamma) / \Gamma_{\text{total}} \quad \Gamma_3 \Gamma_{104} / \Gamma$$

VALUE (eV) CL% EVTS DOCUMENT ID TECN COMMENT

• • • We do not use the following data for averages, fits, limits, etc. • • •

<12 90 <252 UEHARA 08 BELL  $\gamma\gamma \rightarrow \chi_{c0} \rightarrow 2(\pi^+\pi^-)$

NODE=M056G07  
NODE=M056G07

$$\Gamma(\pi^+\pi^-K^+K^-) \times \Gamma(\gamma\gamma) / \Gamma_{\text{total}} \quad \Gamma_8 \Gamma_{104} / \Gamma$$

VALUE (eV) EVTS DOCUMENT ID TECN COMMENT

**41 ± 4 OUR FIT** Error includes scale factor of 1.1.

**38.8 ± 3.7 ± 4.7** 1.7k UEHARA 08 BELL  $\gamma\gamma \rightarrow \chi_{c0} \rightarrow K^+K^-\pi^+\pi^-$

NODE=M056G08  
NODE=M056G08

$$\Gamma(K^+K^-\pi^+\pi^-\pi^0) \times \Gamma(\gamma\gamma) / \Gamma_{\text{total}} \quad \Gamma_{21} \Gamma_{104} / \Gamma$$

VALUE (eV) EVTS DOCUMENT ID TECN COMMENT

**26 ± 4 ± 4** 1094 DEL-AMO-SA..11M BABR  $\gamma\gamma \rightarrow K^+K^-\pi^+\pi^-\pi^0$

NODE=M056G01  
NODE=M056G01

$$\Gamma(K^+ \bar{K}^*(892)^0 \pi^- + \text{c.c.}) \times \Gamma(\gamma\gamma)/\Gamma_{\text{total}} \quad \Gamma_{30} \Gamma_{104}/\Gamma$$

| VALUE (eV)              | EVTS      | DOCUMENT ID | TECN | COMMENT                                                              |
|-------------------------|-----------|-------------|------|----------------------------------------------------------------------|
| <b>17 ± 4 OUR FIT</b>   |           |             |      |                                                                      |
| <b>16.7 ± 6.1 ± 3.0</b> | 495 ± 182 | UEHARA 08   | BELL | $\gamma\gamma \rightarrow \chi_{c0} \rightarrow K^+ K^- \pi^+ \pi^-$ |

NODE=M056G09  
NODE=M056G09

$$\Gamma(K^*(892)^0 \bar{K}^*(892)^0) \times \Gamma(\gamma\gamma)/\Gamma_{\text{total}} \quad \Gamma_{31} \Gamma_{104}/\Gamma$$

| VALUE (eV)                                                                    | CL% | EVTS | DOCUMENT ID | TECN | COMMENT                                                              |
|-------------------------------------------------------------------------------|-----|------|-------------|------|----------------------------------------------------------------------|
| • • • We do not use the following data for averages, fits, limits, etc. • • • |     |      |             |      |                                                                      |
| <6                                                                            | 90  | <148 | UEHARA 08   | BELL | $\gamma\gamma \rightarrow \chi_{c0} \rightarrow K^+ K^- \pi^+ \pi^-$ |

NODE=M056G10  
NODE=M056G10

$$\Gamma(\pi\pi) \times \Gamma(\gamma\gamma)/\Gamma_{\text{total}} \quad \Gamma_{32} \Gamma_{104}/\Gamma$$

| VALUE (eV)                                   | EVTS                                | DOCUMENT ID              | TECN | COMMENT                                                                                          |
|----------------------------------------------|-------------------------------------|--------------------------|------|--------------------------------------------------------------------------------------------------|
| <b>19.1 ± 1.5 OUR FIT</b>                    | Error includes scale factor of 1.2. |                          |      |                                                                                                  |
| <b>23 ± 5 OUR AVERAGE</b>                    |                                     |                          |      |                                                                                                  |
| 29.7 <sup>+17.4</sup> <sub>-12.0</sub> ± 4.8 | 103 <sup>+60</sup> <sub>-42</sub>   | <sup>1</sup> UEHARA 09   | BELL | 10.6 e <sup>+</sup> e <sup>-</sup> → e <sup>+</sup> e <sup>-</sup> π <sup>0</sup> π <sup>0</sup> |
| 22.7 ± 3.2 ± 3.5                             | 129 ± 18                            | <sup>2</sup> NAKAZAWA 05 | BELL | 10.6 e <sup>+</sup> e <sup>-</sup> → e <sup>+</sup> e <sup>-</sup> π <sup>+</sup> π <sup>-</sup> |

NODE=M056G3  
NODE=M056G3

<sup>1</sup>We multiplied the measurement by 3 to convert from π<sup>0</sup>π<sup>0</sup> to ππ. Interference with the continuum included.

NODE=M056G3;LINKAGE=UE

<sup>2</sup>We have multiplied π<sup>+</sup>π<sup>-</sup> measurement by 3/2 to obtain ππ.

NODE=M056G;LINKAGE=NA

$$\Gamma(\eta\eta) \times \Gamma(\gamma\gamma)/\Gamma_{\text{total}} \quad \Gamma_{36} \Gamma_{104}/\Gamma$$

| VALUE (eV)             | EVTS | DOCUMENT ID             | TECN | COMMENT                                                               |
|------------------------|------|-------------------------|------|-----------------------------------------------------------------------|
| <b>9.4 ± 2.3 ± 1.2</b> | 22   | <sup>1</sup> UEHARA 10A | BELL | 10.6 e <sup>+</sup> e <sup>-</sup> → e <sup>+</sup> e <sup>-</sup> ηη |

NODE=M056G06  
NODE=M056G06

<sup>1</sup>Interference with the continuum not included.

NODE=M056G06;LINKAGE=UE

$$\Gamma(\omega\omega) \times \Gamma(\gamma\gamma)/\Gamma_{\text{total}} \quad \Gamma_{39} \Gamma_{104}/\Gamma$$

| VALUE (eV)                                                                    | CL% | DOCUMENT ID          | TECN | COMMENT                                         |
|-------------------------------------------------------------------------------|-----|----------------------|------|-------------------------------------------------|
| • • • We do not use the following data for averages, fits, limits, etc. • • • |     |                      |      |                                                 |
| <3.9                                                                          | 90  | <sup>1</sup> LIU 12B | BELL | $\gamma\gamma \rightarrow 2(\pi^+ \pi^- \pi^0)$ |

NODE=M056G02  
NODE=M056G02

<sup>1</sup>Using B(ω → π<sup>+</sup>π<sup>-</sup>π<sup>0</sup>) = (89.2 ± 0.7)%.

NODE=M056G02;LINKAGE=LI

$$\Gamma(\omega\phi) \times \Gamma(\gamma\gamma)/\Gamma_{\text{total}} \quad \Gamma_{40} \Gamma_{104}/\Gamma$$

| VALUE (eV)                                                                    | CL% | DOCUMENT ID          | TECN | COMMENT                                              |
|-------------------------------------------------------------------------------|-----|----------------------|------|------------------------------------------------------|
| • • • We do not use the following data for averages, fits, limits, etc. • • • |     |                      |      |                                                      |
| <0.34                                                                         | 90  | <sup>1</sup> LIU 12B | BELL | $\gamma\gamma \rightarrow K^+ K^- \pi^+ \pi^- \pi^0$ |

NODE=M056G03  
NODE=M056G03

<sup>1</sup>Using B(φ → K<sup>+</sup>K<sup>-</sup>) = (48.9 ± 0.5)% and B(ω → π<sup>+</sup>π<sup>-</sup>π<sup>0</sup>) = (89.2 ± 0.7)%.

NODE=M056G03;LINKAGE=LI

$$\Gamma(K^+ K^-) \times \Gamma(\gamma\gamma)/\Gamma_{\text{total}} \quad \Gamma_{42} \Gamma_{104}/\Gamma$$

| VALUE (eV)                | EVTS                                | DOCUMENT ID | TECN | COMMENT                                                                                          |
|---------------------------|-------------------------------------|-------------|------|--------------------------------------------------------------------------------------------------|
| <b>13.6 ± 1.1 OUR FIT</b> | Error includes scale factor of 1.1. |             |      |                                                                                                  |
| <b>14.3 ± 1.6 ± 2.3</b>   | 153 ± 17                            | NAKAZAWA 05 | BELL | 10.6 e <sup>+</sup> e <sup>-</sup> → e <sup>+</sup> e <sup>-</sup> K <sup>+</sup> K <sup>-</sup> |

NODE=M056G4  
NODE=M056G4

$$\Gamma(K_S^0 K_S^0) \times \Gamma(\gamma\gamma)/\Gamma_{\text{total}} \quad \Gamma_{43} \Gamma_{104}/\Gamma$$

| VALUE (eV)               | EVTS                                | DOCUMENT ID            | TECN | COMMENT                                |
|--------------------------|-------------------------------------|------------------------|------|----------------------------------------|
| <b>7.1 ± 0.6 OUR FIT</b> | Error includes scale factor of 1.1. |                        |      |                                        |
| <b>8.7 ± 1.7 ± 0.9</b>   | 266                                 | <sup>1</sup> UEHARA 13 | BELL | $\gamma\gamma \rightarrow K_S^0 K_S^0$ |

NODE=M056G5  
NODE=M056G5

• • • We do not use the following data for averages, fits, limits, etc. • • •

|                    |          |          |      |                                                                               |
|--------------------|----------|----------|------|-------------------------------------------------------------------------------|
| 7.00 ± 0.65 ± 0.71 | 134 ± 12 | CHEN 07B | BELL | e <sup>+</sup> e <sup>-</sup> → e <sup>+</sup> e <sup>-</sup> χ <sub>c0</sub> |
|--------------------|----------|----------|------|-------------------------------------------------------------------------------|

<sup>1</sup>Supersedes CHEN 07B.

NODE=M056G5;LINKAGE=UE

$$\Gamma(K^+ K^- K^+ K^-) \times \Gamma(\gamma\gamma)/\Gamma_{\text{total}} \quad \Gamma_{51} \Gamma_{104}/\Gamma$$

| VALUE (eV)               | EVTS                                | DOCUMENT ID | TECN | COMMENT                                                     |
|--------------------------|-------------------------------------|-------------|------|-------------------------------------------------------------|
| <b>6.3 ± 1.0 OUR FIT</b> | Error includes scale factor of 1.4. |             |      |                                                             |
| <b>7.9 ± 1.3 ± 1.1</b>   | 215 ± 36                            | UEHARA 08   | BELL | $\gamma\gamma \rightarrow \chi_{c0} \rightarrow 2(K^+ K^-)$ |

NODE=M056G11  
NODE=M056G11

$$\Gamma(\phi\phi) \times \Gamma(\gamma\gamma)/\Gamma_{\text{total}} \quad \Gamma_{57} \Gamma_{104}/\Gamma$$

| VALUE (eV)                 | EVTS                                | DOCUMENT ID          | TECN | COMMENT                               |
|----------------------------|-------------------------------------|----------------------|------|---------------------------------------|
| <b>1.89 ± 0.13 OUR FIT</b> | Error includes scale factor of 1.1. |                      |      |                                       |
| <b>1.72 ± 0.33 ± 0.14</b>  | 56 ± 11                             | <sup>1</sup> LIU 12B | BELL | $\gamma\gamma \rightarrow 2(K^+ K^-)$ |

NODE=M056G12  
NODE=M056G12

• • • We do not use the following data for averages, fits, limits, etc. • • •

|                 |            |           |      |                                                             |
|-----------------|------------|-----------|------|-------------------------------------------------------------|
| 2.3 ± 0.9 ± 0.4 | 23.6 ± 9.6 | UEHARA 08 | BELL | $\gamma\gamma \rightarrow \chi_{c0} \rightarrow 2(K^+ K^-)$ |
|-----------------|------------|-----------|------|-------------------------------------------------------------|

<sup>1</sup>Supersedes UEHARA 08. Using B(φ → K<sup>+</sup>K<sup>-</sup>) = (48.9 ± 0.5)%.

NODE=M056G12;LINKAGE=LI

$\chi_{c0}(1P)$  BRANCHING RATIOS

## HADRONIC DECAYS

$$\Gamma(\rho^0 \pi^+ \pi^-) / \Gamma(2(\pi^+ \pi^-))$$

$$\Gamma_2 / \Gamma_1$$

VALUE

DOCUMENT ID

TECN

COMMENT

**0.39±0.12 OUR FIT****0.39±0.12**TANENBAUM 78 MRK1  $\psi(2S) \rightarrow \gamma \chi_{c0}$ 

NODE=M056220

NODE=M056305

NODE=M056R54  
NODE=M056R54

$$\Gamma(2(\pi^+ \pi^-)) / \Gamma_{\text{total}}$$

$$\Gamma_1 / \Gamma$$

VALUE (%)

EVTS

DOCUMENT ID

TECN

COMMENT

• • • We do not use the following data for averages, fits, limits, etc. • • •

2.14±0.09±0.05 1946k <sup>1,2</sup> ABLIKIM 24BT BES3  $\psi(2S) \rightarrow \gamma 2\pi^+ 2\pi^-$ 

<sup>1</sup> ABLIKIM 24BT reports  $2.127 \pm 0.002 \pm 0.101$  % from a measurement of  $[\Gamma(\chi_{c0}(1P) \rightarrow 2(\pi^+ \pi^-)) / \Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))]$  assuming  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.79 \pm 0.20) \times 10^{-2}$ , which we rescale to our best value  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.75 \pm 0.22) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.

<sup>2</sup> Not used since the same experimental measurement has been used in another related quantity included elsewhere in the fit.

NODE=M056P08  
NODE=M056P08

NODE=M056P08;LINKAGE=A

NODE=M056P08;LINKAGE=B

$$\Gamma(f_0(980) f_0(980)) / \Gamma_{\text{total}}$$

$$\Gamma_4 / \Gamma$$

VALUE (units  $10^{-4}$ )

EVTS

DOCUMENT ID

TECN

COMMENT

**6.7±2.1±0.2**

36 ± 9

<sup>1</sup> ABLIKIM 04G BES  $\psi(2S) \rightarrow \gamma 2\pi^+ 2\pi^-$ 

<sup>1</sup> ABLIKIM 04G reports  $[\Gamma(\chi_{c0}(1P) \rightarrow f_0(980) f_0(980)) / \Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))] = (6.5 \pm 1.6 \pm 1.3) \times 10^{-5}$  which we divide by our best value  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.75 \pm 0.22) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.

NODE=M056R24  
NODE=M056R24

NODE=M056R24;LINKAGE=AB

$$\Gamma(\pi^+ \pi^- \pi^0 \pi^0) / \Gamma_{\text{total}}$$

$$\Gamma_5 / \Gamma$$

VALUE (%)

EVTS

DOCUMENT ID

TECN

COMMENT

**3.3±0.4±0.1**

1751.4

<sup>1</sup> HE

08B

CLEO

 $e^+ e^- \rightarrow \gamma h^+ h^- h^0 h^0$ 

<sup>1</sup> HE 08B reports  $3.54 \pm 0.10 \pm 0.43 \pm 0.18$  % from a measurement of  $[\Gamma(\chi_{c0}(1P) \rightarrow \pi^+ \pi^- \pi^0 \pi^0) / \Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))]$  assuming  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$ , which we rescale to our best value  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.75 \pm 0.22) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.

NODE=M056R62  
NODE=M056R62

NODE=M056R62;LINKAGE=HE

$$\Gamma(\rho^+ \pi^- \pi^0 + \text{c.c.}) / \Gamma_{\text{total}}$$

$$\Gamma_6 / \Gamma$$

VALUE (%)

EVTS

DOCUMENT ID

TECN

COMMENT

**2.9±0.4±0.1**

1358.5

<sup>1,2</sup> HE

08B

CLEO

 $e^+ e^- \rightarrow \gamma h^+ h^- h^0 h^0$ 

<sup>1</sup> HE 08B reports  $3.04 \pm 0.18 \pm 0.42 \pm 0.16$  % from a measurement of  $[\Gamma(\chi_{c0}(1P) \rightarrow \rho^+ \pi^- \pi^0 + \text{c.c.}) / \Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))]$  assuming  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$ , which we rescale to our best value  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.75 \pm 0.22) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.

<sup>2</sup> Calculated by us. We have added the values from HE 08B for  $\rho^+ \pi^- \pi^0$  and  $\rho^- \pi^+ \pi^0$  decays assuming uncorrelated statistical and fully correlated systematic uncertainties.

NODE=M056R63  
NODE=M056R63

NODE=M056R63;LINKAGE=HE

NODE=M056R63;LINKAGE=OC

$$\Gamma(4\pi^0) / \Gamma_{\text{total}}$$

$$\Gamma_7 / \Gamma$$

VALUE (units  $10^{-3}$ )

EVTS

DOCUMENT ID

TECN

COMMENT

**3.3±0.4±0.1**

3296

<sup>1</sup> ABLIKIM

11A

BES3

 $e^+ e^- \rightarrow \psi(2S) \rightarrow \gamma \chi_{c0}$ 

<sup>1</sup> ABLIKIM 11A reports  $(3.34 \pm 0.06 \pm 0.44) \times 10^{-3}$  from a measurement of  $[\Gamma(\chi_{c0}(1P) \rightarrow 4\pi^0) / \Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))]$  assuming  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.62 \pm 0.31) \times 10^{-2}$ , which we rescale to our best value  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.75 \pm 0.22) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.

NODE=M056R71  
NODE=M056R71

NODE=M056R71;LINKAGE=AB

$$\Gamma(K^+ \bar{K}^*(892)^0 \pi^- + \text{c.c.}) / \Gamma(\pi^+ \pi^- K^+ K^-)$$

$$\Gamma_{30} / \Gamma_8$$

VALUE

DOCUMENT ID

TECN

COMMENT

**0.41±0.09 OUR FIT****0.41±0.10**TANENBAUM 78 MRK1  $\psi(2S) \rightarrow \gamma \chi_{c0}$ NODE=M056R55  
NODE=M056R55

$$\Gamma(K_0^*(1430)^0 \bar{K}_0^*(1430)^0 \rightarrow \pi^+ \pi^- K^+ K^-) / \Gamma_{\text{total}} \quad \Gamma_9 / \Gamma$$

| VALUE (units $10^{-4}$ )    | EVTS | DOCUMENT ID          | TECN     | COMMENT                                           |
|-----------------------------|------|----------------------|----------|---------------------------------------------------|
| $9.9^{+3.6}_{-2.8} \pm 0.2$ | 83   | <sup>1</sup> ABLIKIM | 05Q BES2 | $\psi(2S) \rightarrow \gamma \pi^+ \pi^- K^+ K^-$ |

NODE=M056R36  
NODE=M056R36

<sup>1</sup> ABLIKIM 05Q reports  $(10.44 \pm 2.37^{+3.05}_{-1.90}) \times 10^{-4}$  from a measurement of  $[\Gamma(\chi_{c0}(1P) \rightarrow K_0^*(1430)^0 \bar{K}_0^*(1430)^0 \rightarrow \pi^+ \pi^- K^+ K^-) / \Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))]$  assuming  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$ , which we rescale to our best value  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.75 \pm 0.22) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.

NODE=M056R36;LINKAGE=AB

$$\Gamma(K_0^*(1430)^0 \bar{K}_2^*(1430)^0 + \text{c.c.} \rightarrow \pi^+ \pi^- K^+ K^-) / \Gamma_{\text{total}} \quad \Gamma_{10} / \Gamma$$

| VALUE (units $10^{-4}$ )    | EVTS | DOCUMENT ID          | TECN     | COMMENT                                           |
|-----------------------------|------|----------------------|----------|---------------------------------------------------|
| $8.0^{+2.0}_{-2.4} \pm 0.2$ | 62   | <sup>1</sup> ABLIKIM | 05Q BES2 | $\psi(2S) \rightarrow \gamma \pi^+ \pi^- K^+ K^-$ |

NODE=M056R37  
NODE=M056R37

<sup>1</sup> ABLIKIM 05Q reports  $(8.49 \pm 1.66^{+1.32}_{-1.99}) \times 10^{-4}$  from a measurement of  $[\Gamma(\chi_{c0}(1P) \rightarrow K_0^*(1430)^0 \bar{K}_2^*(1430)^0 + \text{c.c.} \rightarrow \pi^+ \pi^- K^+ K^-) / \Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))]$  assuming  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$ , which we rescale to our best value  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.75 \pm 0.22) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.

NODE=M056R37;LINKAGE=AB

$$\Gamma(K_1(1270)^+ K^- + \text{c.c.} \rightarrow \pi^+ \pi^- K^+ K^-) / \Gamma_{\text{total}} \quad \Gamma_{11} / \Gamma$$

| VALUE (units $10^{-3}$ ) | EVTS | DOCUMENT ID          | TECN     | COMMENT                                           |
|--------------------------|------|----------------------|----------|---------------------------------------------------|
| $6.3 \pm 1.9 \pm 0.1$    | 68   | <sup>1</sup> ABLIKIM | 05Q BES2 | $\psi(2S) \rightarrow \gamma \pi^+ \pi^- K^+ K^-$ |

NODE=M056R38  
NODE=M056R38

<sup>1</sup> ABLIKIM 05Q reports  $(6.66 \pm 1.31^{+1.60}_{-1.51}) \times 10^{-3}$  from a measurement of  $[\Gamma(\chi_{c0}(1P) \rightarrow K_1(1270)^+ K^- + \text{c.c.} \rightarrow \pi^+ \pi^- K^+ K^-) / \Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))]$  assuming  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$ , which we rescale to our best value  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.75 \pm 0.22) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value. The measurement assumes  $B(K_1(1270) \rightarrow K \rho(770)) = 42 \pm 6\%$ .

NODE=M056R38;LINKAGE=AB

$$\Gamma(K_1(1400)^+ K^- + \text{c.c.} \rightarrow \pi^+ \pi^- K^+ K^-) / \Gamma_{\text{total}} \quad \Gamma_{12} / \Gamma$$

| VALUE (units $10^{-3}$ ) | CL% | DOCUMENT ID          | TECN     | COMMENT                                           |
|--------------------------|-----|----------------------|----------|---------------------------------------------------|
| $< 2.7$                  | 90  | <sup>1</sup> ABLIKIM | 05Q BES2 | $\psi(2S) \rightarrow \gamma \pi^+ \pi^- K^+ K^-$ |

NODE=M056R39  
NODE=M056R39

<sup>1</sup> ABLIKIM 05Q reports  $< 2.85 \times 10^{-3}$  from a measurement of  $[\Gamma(\chi_{c0}(1P) \rightarrow K_1(1400)^+ K^- + \text{c.c.} \rightarrow \pi^+ \pi^- K^+ K^-) / \Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))]$  assuming  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$ , which we rescale to our best value  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = 9.75 \times 10^{-2}$ . The measurement assumes  $B(K_1(1400) \rightarrow K^*(892) \pi) = 94 \pm 6\%$ .

NODE=M056R39;LINKAGE=AB

$$\Gamma(f_0(980) f_0(980)) / \Gamma_{\text{total}} \quad \Gamma_{13} / \Gamma$$

| VALUE (units $10^{-5}$ )      | EVTS | DOCUMENT ID          | TECN     | COMMENT                                           |
|-------------------------------|------|----------------------|----------|---------------------------------------------------|
| $16.3^{+10.5}_{-9.0} \pm 0.4$ | 28   | <sup>1</sup> ABLIKIM | 05Q BES2 | $\psi(2S) \rightarrow \gamma \pi^+ \pi^- K^+ K^-$ |

NODE=M056R28  
NODE=M056R28

<sup>1</sup> ABLIKIM 05Q reports  $[\Gamma(\chi_{c0}(1P) \rightarrow f_0(980) f_0(980)) / \Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))] = (1.59 \pm 0.50^{+0.89}_{-0.72}) \times 10^{-5}$  which we divide by our best value  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.75 \pm 0.22) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value. One of the  $f_0(980)$  mesons is identified via decay to  $\pi^+ \pi^-$  while the other via  $K^+ K^-$  decay.

NODE=M056R28;LINKAGE=AB

$$\Gamma(f_0(980) f_0(2200)) / \Gamma_{\text{total}} \quad \Gamma_{14} / \Gamma$$

| VALUE (units $10^{-4}$ )    | EVTS | DOCUMENT ID          | TECN     | COMMENT                                           |
|-----------------------------|------|----------------------|----------|---------------------------------------------------|
| $8.0^{+2.0}_{-2.5} \pm 0.2$ | 77   | <sup>1</sup> ABLIKIM | 05Q BES2 | $\psi(2S) \rightarrow \gamma \pi^+ \pi^- K^+ K^-$ |

NODE=M056R29  
NODE=M056R29

<sup>1</sup> ABLIKIM 05Q reports  $(8.42 \pm 1.42^{+1.65}_{-2.29}) \times 10^{-4}$  from a measurement of  $[\Gamma(\chi_{c0}(1P) \rightarrow f_0(980) f_0(2200)) / \Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))]$  assuming  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$ , which we rescale to our best value  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.75 \pm 0.22) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value. The  $f_0$  mesons are identified via  $f_0(980) \rightarrow \pi^+ \pi^-$  and  $f_0(2200) \rightarrow K^+ K^-$  decays.

NODE=M056R29;LINKAGE=AB

$\Gamma(f_0(1370) f_0(1370))/\Gamma_{\text{total}}$  $\Gamma_{15}/\Gamma$ 

| VALUE (units $10^{-4}$ )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | CL% | DOCUMENT ID          | TECN     | COMMENT                                           |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|----------------------|----------|---------------------------------------------------|
| <b>&lt;2.7</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 90  | <sup>1</sup> ABLIKIM | 05Q BES2 | $\psi(2S) \rightarrow \gamma \pi^+ \pi^- K^+ K^-$ |
| <sup>1</sup> ABLIKIM 05Q reports $< 2.9 \times 10^{-4}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \rightarrow f_0(1370) f_0(1370))/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))]$ assuming $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$ , which we rescale to our best value $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = 9.75 \times 10^{-2}$ . One of the $f_0(1370)$ mesons is identified via decay to $\pi^+ \pi^-$ while the other via $K^+ K^-$ decay. Both branching fractions for these $f_0$ decays are implicitly included in the quoted result. |     |                      |          |                                                   |

NODE=M056R30  
 NODE=M056R30

NODE=M056R30;LINKAGE=AB

 $\Gamma(f_0(1370) f_0(1500))/\Gamma_{\text{total}}$  $\Gamma_{16}/\Gamma$ 

| VALUE (units $10^{-4}$ )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | CL% | DOCUMENT ID          | TECN     | COMMENT                                           |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|----------------------|----------|---------------------------------------------------|
| <b>&lt;1.7</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 90  | <sup>1</sup> ABLIKIM | 05Q BES2 | $\psi(2S) \rightarrow \gamma \pi^+ \pi^- K^+ K^-$ |
| <sup>1</sup> ABLIKIM 05Q reports $< 1.8 \times 10^{-4}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \rightarrow f_0(1370) f_0(1500))/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))]$ assuming $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$ , which we rescale to our best value $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = 9.75 \times 10^{-2}$ . The $f_0$ mesons are identified via $f_0(1370) \rightarrow \pi^+ \pi^-$ and $f_0(1500) \rightarrow K^+ K^-$ decays. Both branching fractions for these $f_0$ decays are implicitly included in the quoted result. |     |                      |          |                                                   |

NODE=M056R31  
 NODE=M056R31

NODE=M056R31;LINKAGE=AB

 $\Gamma(f_0(1370) f_0(1710))/\Gamma_{\text{total}}$  $\Gamma_{17}/\Gamma$ 

| VALUE (units $10^{-4}$ )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | CL% | DOCUMENT ID          | TECN     | COMMENT                                           |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|----------------------|----------|---------------------------------------------------|
| <b><math>6.7^{+3.5}_{-2.3} \pm 0.2</math></b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 61  | <sup>1</sup> ABLIKIM | 05Q BES2 | $\psi(2S) \rightarrow \gamma \pi^+ \pi^- K^+ K^-$ |
| <sup>1</sup> ABLIKIM 05Q reports $(7.12 \pm 1.85^{+3.28}_{-1.68}) \times 10^{-4}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \rightarrow f_0(1370) f_0(1710))/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))]$ assuming $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$ , which we rescale to our best value $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.75 \pm 0.22) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value. The $f_0$ mesons are identified via $f_0(1370) \rightarrow \pi^+ \pi^-$ and $f_0(1710) \rightarrow K^+ K^-$ decays. Both branching fractions for these $f_0$ decays are implicitly included in the quoted result. |     |                      |          |                                                   |

NODE=M056R32  
 NODE=M056R32

NODE=M056R32;LINKAGE=AB

 $\Gamma(f_0(1500) f_0(1370))/\Gamma_{\text{total}}$  $\Gamma_{18}/\Gamma$ 

| VALUE (units $10^{-4}$ )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | CL% | DOCUMENT ID          | TECN     | COMMENT                                           |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|----------------------|----------|---------------------------------------------------|
| <b>&lt;1.3</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 90  | <sup>1</sup> ABLIKIM | 05Q BES2 | $\psi(2S) \rightarrow \gamma \pi^+ \pi^- K^+ K^-$ |
| <sup>1</sup> ABLIKIM 05Q reports $< 1.4 \times 10^{-4}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \rightarrow f_0(1500) f_0(1370))/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))]$ assuming $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$ , which we rescale to our best value $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = 9.75 \times 10^{-2}$ . The $f_0$ mesons are identified via $f_0(1500) \rightarrow \pi^+ \pi^-$ and $f_0(1370) \rightarrow K^+ K^-$ decays. Both branching fractions for these $f_0$ decays are implicitly included in the quoted result. |     |                      |          |                                                   |

NODE=M056R33  
 NODE=M056R33

NODE=M056R33;LINKAGE=AB

 $\Gamma(f_0(1500) f_0(1500))/\Gamma_{\text{total}}$  $\Gamma_{19}/\Gamma$ 

| VALUE (units $10^{-4}$ )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | CL% | DOCUMENT ID          | TECN     | COMMENT                                           |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|----------------------|----------|---------------------------------------------------|
| <b>&lt;0.5</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 90  | <sup>1</sup> ABLIKIM | 05Q BES2 | $\psi(2S) \rightarrow \gamma \pi^+ \pi^- K^+ K^-$ |
| <sup>1</sup> ABLIKIM 05Q reports $< 0.55 \times 10^{-4}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \rightarrow f_0(1500) f_0(1500))/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))]$ assuming $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$ , which we rescale to our best value $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = 9.75 \times 10^{-2}$ . One of the $f_0(1500)$ is identified via decay to $\pi^+ \pi^-$ while the other via $K^+ K^-$ decay. Both branching fractions for these $f_0$ decays are implicitly included in the quoted result. |     |                      |          |                                                   |

NODE=M056R34  
 NODE=M056R34

NODE=M056R34;LINKAGE=AB

 $\Gamma(f_0(1500) f_0(1710))/\Gamma_{\text{total}}$  $\Gamma_{20}/\Gamma$ 

| VALUE (units $10^{-4}$ )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | CL% | DOCUMENT ID          | TECN     | COMMENT                                           |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|----------------------|----------|---------------------------------------------------|
| <b>&lt;0.7</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 90  | <sup>1</sup> ABLIKIM | 05Q BES2 | $\psi(2S) \rightarrow \gamma \pi^+ \pi^- K^+ K^-$ |
| <sup>1</sup> ABLIKIM 05Q reports $< 0.73 \times 10^{-4}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \rightarrow f_0(1500) f_0(1710))/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))]$ assuming $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$ , which we rescale to our best value $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = 9.75 \times 10^{-2}$ . The $f_0$ mesons are identified via $f_0(1500) \rightarrow \pi^+ \pi^-$ and $f_0(1710) \rightarrow K^+ K^-$ decays. Both branching fractions for these $f_0$ decays are implicitly included in the quoted result. |     |                      |          |                                                   |

NODE=M056R35  
 NODE=M056R35

NODE=M056R35;LINKAGE=AB

$$\Gamma(K^+ K^- \pi^+ \pi^- \pi^0)/\Gamma_{\text{total}} \quad \Gamma_{21}/\Gamma$$

| VALUE (units $10^{-3}$ ) | EVTS | DOCUMENT ID          | TECN     | COMMENT                                                     |
|--------------------------|------|----------------------|----------|-------------------------------------------------------------|
| <b>8.61±0.13±0.94</b>    | 9.0k | <sup>1</sup> ABLIKIM | 13B BES3 | $e^+ e^- \rightarrow \psi(2S) \rightarrow \gamma \chi_{c0}$ |

<sup>1</sup> Using  $1.06 \times 10^8$   $\psi(2S)$  mesons and  $B(\psi(2S) \rightarrow \chi_{c0} \gamma) = (9.68 \pm 0.31)\%$ .

NODE=M056R85  
NODE=M056R85

NODE=M056R85;LINKAGE=A

$$\Gamma(K_S^0 K^\pm \pi^\mp \pi^+ \pi^-)/\Gamma_{\text{total}} \quad \Gamma_{22}/\Gamma$$

| VALUE (units $10^{-3}$ ) | EVTS | DOCUMENT ID          | TECN     | COMMENT                                                     |
|--------------------------|------|----------------------|----------|-------------------------------------------------------------|
| <b>4.22±0.10±0.43</b>    | 2.7k | <sup>1</sup> ABLIKIM | 13B BES3 | $e^+ e^- \rightarrow \psi(2S) \rightarrow \gamma \chi_{c0}$ |

<sup>1</sup> Using  $1.06 \times 10^8$   $\psi(2S)$  mesons and  $B(\psi(2S) \rightarrow \chi_{c0} \gamma) = (9.68 \pm 0.31)\%$ .

NODE=M056R86  
NODE=M056R86

NODE=M056R86;LINKAGE=A

$$\Gamma(K^+ K^- \pi^0 \pi^0)/\Gamma_{\text{total}} \quad \Gamma_{23}/\Gamma$$

| VALUE (%)             | EVTS  | DOCUMENT ID     | TECN     | COMMENT                                      |
|-----------------------|-------|-----------------|----------|----------------------------------------------|
| <b>0.56±0.09±0.01</b> | 213.5 | <sup>1</sup> HE | 08B CLEO | $e^+ e^- \rightarrow \gamma h^+ h^- h^0 h^0$ |

<sup>1</sup> HE 08B reports  $0.59 \pm 0.05 \pm 0.08 \pm 0.03$  % from a measurement of  $[\Gamma(\chi_{c0}(1P) \rightarrow K^+ K^- \pi^0 \pi^0)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))]$  assuming  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$ , which we rescale to our best value  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.75 \pm 0.22) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.

NODE=M056R64  
NODE=M056R64

NODE=M056R64;LINKAGE=HE

$$\Gamma(K^+ \pi^- \bar{K}^0 \pi^0 + \text{c.c.})/\Gamma_{\text{total}} \quad \Gamma_{24}/\Gamma$$

| VALUE (%)             | EVTS  | DOCUMENT ID     | TECN     | COMMENT                                      |
|-----------------------|-------|-----------------|----------|----------------------------------------------|
| <b>2.50±0.33±0.06</b> | 401.7 | <sup>1</sup> HE | 08B CLEO | $e^+ e^- \rightarrow \gamma h^+ h^- h^0 h^0$ |

<sup>1</sup> HE 08B reports  $2.64 \pm 0.15 \pm 0.31 \pm 0.14$  % from a measurement of  $[\Gamma(\chi_{c0}(1P) \rightarrow K^+ \pi^- \bar{K}^0 \pi^0 + \text{c.c.})/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))]$  assuming  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$ , which we rescale to our best value  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.75 \pm 0.22) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.

NODE=M056R66  
NODE=M056R66

NODE=M056R66;LINKAGE=HE

$$\Gamma(\rho^+ K^- K^0 + \text{c.c.})/\Gamma_{\text{total}} \quad \Gamma_{25}/\Gamma$$

| VALUE (%)             | EVTS  | DOCUMENT ID     | TECN     | COMMENT                                      |
|-----------------------|-------|-----------------|----------|----------------------------------------------|
| <b>1.21±0.21±0.03</b> | 179.7 | <sup>1</sup> HE | 08B CLEO | $e^+ e^- \rightarrow \gamma h^+ h^- h^0 h^0$ |

<sup>1</sup> HE 08B reports  $1.28 \pm 0.16 \pm 0.15 \pm 0.07$  % from a measurement of  $[\Gamma(\chi_{c0}(1P) \rightarrow \rho^+ K^- K^0 + \text{c.c.})/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))]$  assuming  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$ , which we rescale to our best value  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.75 \pm 0.22) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.

NODE=M056R67  
NODE=M056R67

NODE=M056R67;LINKAGE=HE

$$\Gamma(K^*(892)^- K^+ \pi^0 \rightarrow K^+ \pi^- \bar{K}^0 \pi^0 + \text{c.c.})/\Gamma_{\text{total}} \quad \Gamma_{26}/\Gamma$$

| VALUE (%)             | EVTS | DOCUMENT ID     | TECN     | COMMENT                                      |
|-----------------------|------|-----------------|----------|----------------------------------------------|
| <b>0.46±0.12±0.01</b> | 64.1 | <sup>1</sup> HE | 08B CLEO | $e^+ e^- \rightarrow \gamma h^+ h^- h^0 h^0$ |

<sup>1</sup> HE 08B reports  $0.49 \pm 0.10 \pm 0.07 \pm 0.03$  % from a measurement of  $[\Gamma(\chi_{c0}(1P) \rightarrow K^*(892)^- K^+ \pi^0 \rightarrow K^+ \pi^- \bar{K}^0 \pi^0 + \text{c.c.})/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))]$  assuming  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$ , which we rescale to our best value  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.75 \pm 0.22) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.

NODE=M056R68  
NODE=M056R68

NODE=M056R68;LINKAGE=HE

$$\Gamma(K_S^0 K_S^0 \pi^+ \pi^-)/\Gamma_{\text{total}} \quad \Gamma_{27}/\Gamma$$

| VALUE (units $10^{-3}$ ) | EVTS     | DOCUMENT ID          | TECN     | COMMENT                                 |
|--------------------------|----------|----------------------|----------|-----------------------------------------|
| <b>5.7±1.1±0.1</b>       | 152 ± 14 | <sup>1</sup> ABLIKIM | 050 BES2 | $\psi(2S) \rightarrow \gamma \chi_{c0}$ |

<sup>1</sup> ABLIKIM 050 reports  $[\Gamma(\chi_{c0}(1P) \rightarrow K_S^0 K_S^0 \pi^+ \pi^-)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))]$  =  $(0.558 \pm 0.051 \pm 0.089) \times 10^{-3}$  which we divide by our best value  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.75 \pm 0.22) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.

NODE=M056R47  
NODE=M056R47

NODE=M056R47;LINKAGE=AB

$$\Gamma(K^+ K^- \eta \pi^0)/\Gamma_{\text{total}} \quad \Gamma_{28}/\Gamma$$

| VALUE (%)             | EVTS | DOCUMENT ID     | TECN     | COMMENT                                      |
|-----------------------|------|-----------------|----------|----------------------------------------------|
| <b>0.30±0.07±0.01</b> | 56.4 | <sup>1</sup> HE | 08B CLEO | $e^+ e^- \rightarrow \gamma h^+ h^- h^0 h^0$ |

<sup>1</sup> HE 08B reports  $0.32 \pm 0.05 \pm 0.05 \pm 0.02$  % from a measurement of  $[\Gamma(\chi_{c0}(1P) \rightarrow K^+ K^- \eta \pi^0)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))]$  assuming  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$ , which we rescale to our best value  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.75 \pm 0.22) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.

NODE=M056R69  
NODE=M056R69

NODE=M056R69;LINKAGE=HE

$\Gamma(3(\pi^+\pi^-))/\Gamma_{\text{total}}$  $\Gamma_{29}/\Gamma$ 

| VALUE (units $10^{-3}$ )                     | EVTS                                                        | DOCUMENT ID            | TECN     | COMMENT                                     |
|----------------------------------------------|-------------------------------------------------------------|------------------------|----------|---------------------------------------------|
| <b><math>19.6 \pm 2.2</math> OUR AVERAGE</b> | Error includes scale factor of 3.4. See the ideogram below. |                        |          |                                             |
| $20.9 \pm 0.5 \pm 0.5$                       | 145k                                                        | <sup>1</sup> ABLIKIM   | 22Q BES3 | $\psi(2S) \rightarrow \gamma 3(\pi^+\pi^-)$ |
| $11.7 \pm 1.0 \pm 1.9$                       |                                                             | <sup>2</sup> BAI       | 99B BES  | $\psi(2S) \rightarrow \gamma \chi_{c0}$     |
| $12.5 \pm 2.9 \pm 0.5$                       |                                                             | <sup>2</sup> TANENBAUM | 78 MRK1  | $\psi(2S) \rightarrow \gamma \chi_{c0}$     |

<sup>1</sup> ABLIKIM 22Q reports  $(2.080 \pm 0.006 \pm 0.068) \times 10^{-2}$  from a measurement of  $[\Gamma(\chi_{c0}(1P) \rightarrow 3(\pi^+\pi^-))/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))]$  assuming  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.79 \pm 0.2) \times 10^{-2}$ , which we rescale to our best value  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.75 \pm 0.22) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.

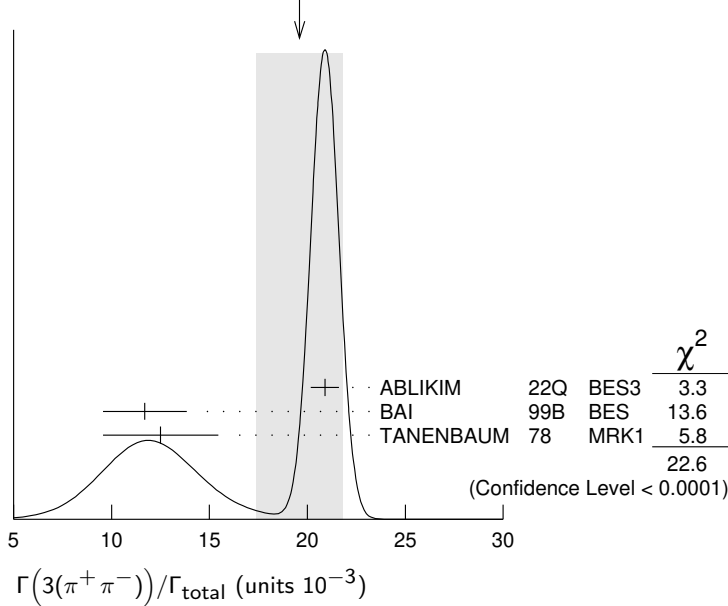
<sup>2</sup> Rescaled by us using  $B(\psi(2S) \rightarrow \gamma \chi_{c0}) = (9.4 \pm 0.4)\%$  and  $B(\psi(2S) \rightarrow J/\psi(1S)\pi^+\pi^-) = (32.6 \pm 0.5)\%$ .

NODE=M056R4  
NODE=M056R4

NODE=M056R4;LINKAGE=A

NODE=M056R;LINKAGE=X1

WEIGHTED AVERAGE  
 $19.6 \pm 2.2$  (Error scaled by 3.4)

 $\Gamma(K^*(892)^0 \bar{K}^*(892)^0)/\Gamma_{\text{total}}$  $\Gamma_{31}/\Gamma$ 

| VALUE (units $10^{-3}$ )                          | EVTS       | DOCUMENT ID            | TECN     | COMMENT                                          |
|---------------------------------------------------|------------|------------------------|----------|--------------------------------------------------|
| <b><math>1.72^{+0.60}_{-0.55} \pm 0.04</math></b> | 64         | <sup>1</sup> ABLIKIM   | 05Q BES2 | $\psi(2S) \rightarrow \gamma \pi^+\pi^- K^+ K^-$ |
| $1.57 \pm 0.40 \pm 0.04$                          | $30 \pm 6$ | <sup>2,3</sup> ABLIKIM | 04H BES  | Repl. by ABLIKIM 05Q                             |

• • • We do not use the following data for averages, fits, limits, etc. • • •

<sup>1</sup> ABLIKIM 05Q reports  $[\Gamma(\chi_{c0}(1P) \rightarrow K^*(892)^0 \bar{K}^*(892)^0)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))]$   $= (0.168 \pm 0.035^{+0.047}_{-0.040}) \times 10^{-3}$  which we divide by our best value  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.75 \pm 0.22) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.

<sup>2</sup> Assumes  $B(K^*(892)^0 \rightarrow K^-\pi^+) = 2/3$ .

<sup>3</sup> ABLIKIM 04H reports  $[\Gamma(\chi_{c0}(1P) \rightarrow K^*(892)^0 \bar{K}^*(892)^0)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))]$   $= (1.53 \pm 0.29 \pm 0.26) \times 10^{-4}$  which we divide by our best value  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.75 \pm 0.22) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.

NODE=M056R26  
NODE=M056R26

NODE=M056R26;LINKAGE=AI

NODE=M056R;LINKAGE=AL  
NODE=M056R26;LINKAGE=AB

 $\Gamma(\pi^0 \eta_c)/\Gamma_{\text{total}}$  $\Gamma_{35}/\Gamma$ 

| VALUE                                       | CL% | DOCUMENT ID          | TECN     | COMMENT                                            |
|---------------------------------------------|-----|----------------------|----------|----------------------------------------------------|
| <b><math>&lt; 1.6 \times 10^{-3}</math></b> | 90  | <sup>1</sup> ABLIKIM | 15N BES3 | $\psi(2s) e^+ e^- \rightarrow \gamma \pi^0 \eta_c$ |

<sup>1</sup> Using  $B(\eta_c \rightarrow K_S^0 K^\pm \pi^\mp) \times B(K_S^0 \rightarrow \pi^+ \pi^-) \times B(\pi^0 \rightarrow \gamma \gamma) = (1.66 \pm 0.11) \times 10^{-2}$ .

NODE=M056R00  
NODE=M056R00

NODE=M056R00;LINKAGE=A

 $\Gamma(\eta \eta')/\Gamma_{\text{total}}$  $\Gamma_{37}/\Gamma$ 

| VALUE (units $10^{-5}$ )                | CL% | EVTS        | DOCUMENT ID          | TECN      | COMMENT                                  |
|-----------------------------------------|-----|-------------|----------------------|-----------|------------------------------------------|
| <b><math>9.1 \pm 1.1 \pm 0.2</math></b> |     | 85          | <sup>1</sup> ABLIKIM | 17AI BES3 | $\psi(2S) \rightarrow \gamma \eta' \eta$ |
| $< 24$                                  | 90  | $35 \pm 13$ | <sup>2</sup> ASNER   | 09 CLEO   | $\psi(2S) \rightarrow \gamma \eta' \eta$ |
| $< 50$                                  | 90  |             | <sup>3</sup> ADAMS   | 07 CLEO   | $\psi(2S) \rightarrow \gamma \chi_{c0}$  |

• • • We do not use the following data for averages, fits, limits, etc. • • •

NODE=M056R03  
NODE=M056R03

- <sup>1</sup> ABLIKIM 17AI reports  $(8.92 \pm 0.84 \pm 0.65) \times 10^{-5}$  from a measurement of  $[\Gamma(\chi_{c0}(1P) \rightarrow \eta\eta')/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))]$  assuming  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.99 \pm 0.27) \times 10^{-2}$ , which we rescale to our best value  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.75 \pm 0.22) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.
- <sup>2</sup> ASNER 09 reports  $< 0.25 \times 10^{-3}$  from a measurement of  $[\Gamma(\chi_{c0}(1P) \rightarrow \eta\eta')/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))]$  assuming  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$ , which we rescale to our best value  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = 9.75 \times 10^{-2}$ .
- <sup>3</sup> Superseded by ASNER 09. ADAMS 07 reports  $< 0.5 \times 10^{-3}$  from a measurement of  $[\Gamma(\chi_{c0}(1P) \rightarrow \eta\eta')/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))]$  assuming  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$ , which we rescale to our best value  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = 9.75 \times 10^{-2}$ .

NODE=M056R03;LINKAGE=A

NODE=M056R03;LINKAGE=AS

NODE=M056R03;LINKAGE=AD

 **$\Gamma(\eta'\eta')/\Gamma_{\text{total}}$**  **$\Gamma_{38}/\Gamma$** 

| VALUE (units $10^{-3}$ )                                                      | EVTS | DOCUMENT ID          | TECN      | COMMENT                                 |
|-------------------------------------------------------------------------------|------|----------------------|-----------|-----------------------------------------|
| <b>2.18±0.12 OUR AVERAGE</b>                                                  |      |                      |           |                                         |
| 2.24±0.13±0.05                                                                | 2.5k | <sup>1</sup> ABLIKIM | 17AI BES3 | $\psi(2S) \rightarrow \gamma\eta'\eta'$ |
| 2.01±0.21±0.05                                                                | 0.4k | <sup>2</sup> ASNER   | 09 CLEO   | $\psi(2S) \rightarrow \gamma\eta'\eta'$ |
| • • • We do not use the following data for averages, fits, limits, etc. • • • |      |                      |           |                                         |
| 1.61±0.41±0.04                                                                | 23   | <sup>3</sup> ADAMS   | 07 CLEO   | $\psi(2S) \rightarrow \gamma\chi_{c0}$  |

NODE=M056R04  
NODE=M056R04

- <sup>1</sup> ABLIKIM 17AI reports  $(2.19 \pm 0.03 \pm 0.14) \times 10^{-3}$  from a measurement of  $[\Gamma(\chi_{c0}(1P) \rightarrow \eta'\eta')/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))]$  assuming  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.99 \pm 0.27) \times 10^{-2}$ , which we rescale to our best value  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.75 \pm 0.22) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.
- <sup>2</sup> ASNER 09 reports  $(2.12 \pm 0.13 \pm 0.21) \times 10^{-3}$  from a measurement of  $[\Gamma(\chi_{c0}(1P) \rightarrow \eta'\eta')/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))]$  assuming  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$ , which we rescale to our best value  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.75 \pm 0.22) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.
- <sup>3</sup> Superseded by ASNER 09. ADAMS 07 reports  $(1.7 \pm 0.4 \pm 0.2) \times 10^{-3}$  from a measurement of  $[\Gamma(\chi_{c0}(1P) \rightarrow \eta'\eta')/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))]$  assuming  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = 0.0922 \pm 0.0011 \pm 0.0046$ , which we rescale to our best value  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.75 \pm 0.22) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.

NODE=M056R04;LINKAGE=A

NODE=M056R04;LINKAGE=AS

NODE=M056R04;LINKAGE=AD

 **$\Gamma(\omega\omega)/\Gamma_{\text{total}}$**  **$\Gamma_{39}/\Gamma$** 

| VALUE (units $10^{-3}$ )     | EVTS       | DOCUMENT ID          | TECN     | COMMENT                                                        |
|------------------------------|------------|----------------------|----------|----------------------------------------------------------------|
| <b>0.97±0.11 OUR AVERAGE</b> |            |                      |          |                                                                |
| 0.94±0.11±0.02               | 991        | <sup>1</sup> ABLIKIM | 11K BES3 | $\psi(2S) \rightarrow \gamma$ hadrons                          |
| 2.18±0.66±0.05               | 38.1 ± 9.6 | <sup>2</sup> ABLIKIM | 05N BES2 | $\psi(2S) \rightarrow \gamma\chi_{c0} \rightarrow \gamma 6\pi$ |

NODE=M056R27  
NODE=M056R27

- <sup>1</sup> ABLIKIM 11K reports  $(0.95 \pm 0.03 \pm 0.11) \times 10^{-3}$  from a measurement of  $[\Gamma(\chi_{c0}(1P) \rightarrow \omega\omega)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))]$  assuming  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.62 \pm 0.31) \times 10^{-2}$ , which we rescale to our best value  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.75 \pm 0.22) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.
- <sup>2</sup> ABLIKIM 05N reports  $[\Gamma(\chi_{c0}(1P) \rightarrow \omega\omega)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))]$  =  $(0.212 \pm 0.053 \pm 0.037) \times 10^{-3}$  which we divide by our best value  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.75 \pm 0.22) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.

NODE=M056R27;LINKAGE=AL

NODE=M056R27;LINKAGE=AB

 **$\Gamma(\omega\phi)/\Gamma_{\text{total}}$**  **$\Gamma_{40}/\Gamma$** 

| VALUE (units $10^{-4}$ )                                                      | EVTS | DOCUMENT ID            | TECN     | COMMENT                               |
|-------------------------------------------------------------------------------|------|------------------------|----------|---------------------------------------|
| <b>1.42±0.13±0.03</b>                                                         |      |                        |          |                                       |
| • • • We do not use the following data for averages, fits, limits, etc. • • • |      |                        |          |                                       |
| 1.18±0.22±0.03                                                                | 76   | <sup>2,3</sup> ABLIKIM | 11K BES3 | $\psi(2S) \rightarrow \gamma$ hadrons |

NODE=M056R76  
NODE=M056R76

- <sup>1</sup> ABLIKIM 19J reports  $[\Gamma(\chi_{c0}(1P) \rightarrow \omega\phi)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))] = (13.83 \pm 0.70 \pm 1.01) \times 10^{-6}$  which we divide by our best value  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.75 \pm 0.22) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.
- <sup>2</sup> ABLIKIM 11K reports  $(1.2 \pm 0.1 \pm 0.2) \times 10^{-4}$  from a measurement of  $[\Gamma(\chi_{c0}(1P) \rightarrow \omega\phi)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))]$  assuming  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.62 \pm 0.31) \times 10^{-2}$ , which we rescale to our best value  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.75 \pm 0.22) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.
- <sup>3</sup> Superseded by ABLIKIM 19J.

NODE=M056R76;LINKAGE=A

NODE=M056R76;LINKAGE=AL

NODE=M056R76;LINKAGE=B

$\Gamma(\omega K^+ K^-)/\Gamma_{\text{total}}$  $\Gamma_{41}/\Gamma$ 

| VALUE (units $10^{-3}$ ) | EVTS | DOCUMENT ID          | TECN     | COMMENT                                                   |
|--------------------------|------|----------------------|----------|-----------------------------------------------------------|
| <b>1.94±0.06±0.20</b>    | 1.4k | <sup>1</sup> ABLIKIM | 13B BES3 | $e^+e^- \rightarrow \psi(2S) \rightarrow \gamma\chi_{c0}$ |

<sup>1</sup> Using  $1.06 \times 10^8$   $\psi(2S)$  mesons and  $B(\psi(2S) \rightarrow \chi_{c0}\gamma) = (9.68 \pm 0.31)\%$ .

NODE=M056R87  
NODE=M056R87

NODE=M056R87;LINKAGE=A

 $\Gamma(\pi^+ \pi^- \eta)/\Gamma_{\text{total}}$  $\Gamma_{44}/\Gamma$ 

| VALUE (units $10^{-3}$ ) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|-------------|------|---------|
|--------------------------|-----|-------------|------|---------|

**<0.20** 90 <sup>1</sup> ATHAR 07 CLEO  $\psi(2S) \rightarrow \gamma h^+ h^- h^0$

• • • We do not use the following data for averages, fits, limits, etc. • • •

<1.0 90 <sup>2</sup> ABLIKIM 06R BES2  $\psi(2S) \rightarrow \gamma\chi_{c0}$

<sup>1</sup> ATHAR 07 reports  $< 0.21 \times 10^{-3}$  from a measurement of  $[\Gamma(\chi_{c0}(1P) \rightarrow \pi^+ \pi^- \eta)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))]$  assuming  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$ , which we rescale to our best value  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = 9.75 \times 10^{-2}$ .

<sup>2</sup> ABLIKIM 06R reports  $< 1.1 \times 10^{-3}$  from a measurement of  $[\Gamma(\chi_{c0}(1P) \rightarrow \pi^+ \pi^- \eta)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))]$  assuming  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.2 \pm 0.4) \times 10^{-2}$ , which we rescale to our best value  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = 9.75 \times 10^{-2}$ .

NODE=M056R08  
NODE=M056R08

NODE=M056R08;LINKAGE=AT

NODE=M056R08;LINKAGE=AB

 $\Gamma(\pi^+ \pi^- \eta')/\Gamma_{\text{total}}$  $\Gamma_{45}/\Gamma$ 

| VALUE (units $10^{-3}$ ) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|-------------|------|---------|
|--------------------------|-----|-------------|------|---------|

**<0.4** 90 <sup>1</sup> ATHAR 07 CLEO  $\psi(2S) \rightarrow \gamma h^+ h^- h^0$

<sup>1</sup> ATHAR 07 reports  $< 0.38 \times 10^{-3}$  from a measurement of  $[\Gamma(\chi_{c0}(1P) \rightarrow \pi^+ \pi^- \eta')/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))]$  assuming  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$ , which we rescale to our best value  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = 9.75 \times 10^{-2}$ .

NODE=M056R51  
NODE=M056R51

NODE=M056R51;LINKAGE=AT

 $\Gamma(\bar{K}^0 K^+ \pi^- + \text{c.c.})/\Gamma_{\text{total}}$  $\Gamma_{46}/\Gamma$ 

| VALUE (units $10^{-3}$ ) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|-------------|------|---------|
|--------------------------|-----|-------------|------|---------|

**<0.09** 90 <sup>1</sup> ATHAR 07 CLEO  $\psi(2S) \rightarrow \gamma h^+ h^- h^0$

• • • We do not use the following data for averages, fits, limits, etc. • • •

<0.7 90 <sup>2,3</sup> ABLIKIM 06R BES2  $\psi(2S) \rightarrow \gamma\chi_{c0}$

<0.7 90 <sup>3,4</sup> BAI 99B BES  $\psi(2S) \rightarrow \gamma\chi_{c0}$

<sup>1</sup> ATHAR 07 reports  $< 0.10 \times 10^{-3}$  from a measurement of  $[\Gamma(\chi_{c0}(1P) \rightarrow \bar{K}^0 K^+ \pi^- + \text{c.c.})/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))]$  assuming  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$ , which we rescale to our best value  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = 9.75 \times 10^{-2}$ .

<sup>2</sup> ABLIKIM 06R reports  $< 0.70 \times 10^{-3}$  from a measurement of  $[\Gamma(\chi_{c0}(1P) \rightarrow \bar{K}^0 K^+ \pi^- + \text{c.c.})/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))]$  assuming  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.2 \pm 0.4) \times 10^{-2}$ , which we rescale to our best value  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = 9.75 \times 10^{-2}$ .

<sup>3</sup> We have multiplied the  $K_S^0 K^+ \pi^-$  measurement by a factor of 2 to convert to  $K^0 K^+ \pi^-$ .

<sup>4</sup> Rescaled by us using  $B(\psi(2S) \rightarrow \gamma\chi_{c0}) = (9.4 \pm 0.4)\%$  and  $B(\psi(2S) \rightarrow J/\psi(1S)\pi^+\pi^-) = (32.6 \pm 0.5)\%$ .

NODE=M056R17  
NODE=M056R17

NODE=M056R17;LINKAGE=AT

NODE=M056R17;LINKAGE=AB

NODE=M056R17;LINKAGE=BA

NODE=M056R17;LINKAGE=X1

 $\Gamma(K^+ K^- \pi^0)/\Gamma_{\text{total}}$  $\Gamma_{47}/\Gamma$ 

| VALUE (units $10^{-3}$ ) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|-------------|------|---------|
|--------------------------|-----|-------------|------|---------|

**<0.06** 90 <sup>1</sup> ATHAR 07 CLEO  $\psi(2S) \rightarrow \gamma h^+ h^- h^0$

<sup>1</sup> ATHAR 07 reports  $< 0.06 \times 10^{-3}$  from a measurement of  $[\Gamma(\chi_{c0}(1P) \rightarrow K^+ K^- \pi^0)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))]$  assuming  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$ , which we rescale to our best value  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = 9.75 \times 10^{-2}$ .

NODE=M056R05  
NODE=M056R05

NODE=M056R05;LINKAGE=AT

 $\Gamma(K^+ K^- \eta)/\Gamma_{\text{total}}$  $\Gamma_{48}/\Gamma$ 

| VALUE (units $10^{-3}$ ) | CL% | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|-------------|------|---------|
|--------------------------|-----|-------------|------|---------|

**<0.23** 90 <sup>1</sup> ATHAR 07 CLEO  $\psi(2S) \rightarrow \gamma h^+ h^- h^0$

<sup>1</sup> ATHAR 07 reports  $< 0.24 \times 10^{-3}$  from a measurement of  $[\Gamma(\chi_{c0}(1P) \rightarrow K^+ K^- \eta)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))]$  assuming  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$ , which we rescale to our best value  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = 9.75 \times 10^{-2}$ .

NODE=M056R09  
NODE=M056R09

NODE=M056R09;LINKAGE=AT

$\Gamma(K^+ K^- K_S^0 K_S^0)/\Gamma_{\text{total}}$  $\Gamma_{49}/\Gamma$ 

| VALUE (units $10^{-3}$ ) | EVTS       | DOCUMENT ID          | TECN     | COMMENT                                 |
|--------------------------|------------|----------------------|----------|-----------------------------------------|
| <b>1.42±0.48±0.03</b>    | 16.8 ± 4.8 | <sup>1</sup> ABLIKIM | 050 BES2 | $\psi(2S) \rightarrow \gamma \chi_{c0}$ |

NODE=M056R48  
 NODE=M056R48

<sup>1</sup> ABLIKIM 050 reports  $[\Gamma(\chi_{c0}(1P) \rightarrow K^+ K^- K_S^0 K_S^0)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))] = (0.138 \pm 0.039 \pm 0.025) \times 10^{-3}$  which we divide by our best value  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.75 \pm 0.22) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.

NODE=M056R48;LINKAGE=AB

 $\Gamma(K_S^0 K_S^0 K_S^0 K_S^0)/\Gamma_{\text{total}}$  $\Gamma_{50}/\Gamma$ 

| VALUE (units $10^{-4}$ ) | EVTS | DOCUMENT ID          | TECN      | COMMENT                              |
|--------------------------|------|----------------------|-----------|--------------------------------------|
| <b>5.8±0.5±0.1</b>       | 319  | <sup>1</sup> ABLIKIM | 19AA BES3 | $\psi(2S) \rightarrow \gamma 4K_S^0$ |

NODE=M056R95  
 NODE=M056R95

<sup>1</sup> Using  $B(K_S^0 \rightarrow \pi^+ \pi^-) = (69.20 \pm 0.05)\%$ . ABLIKIM 19AA reports  $[\Gamma(\chi_{c0}(1P) \rightarrow K_S^0 K_S^0 K_S^0 K_S^0)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))] = (5.64 \pm 0.33 \pm 0.37) \times 10^{-5}$  which we divide by our best value  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.75 \pm 0.22) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value..

NODE=M056R95;LINKAGE=A

 $\Gamma(K^+ K^- \phi)/\Gamma_{\text{total}}$  $\Gamma_{52}/\Gamma$ 

| VALUE (units $10^{-3}$ ) | EVTS | DOCUMENT ID          | TECN     | COMMENT                                 |
|--------------------------|------|----------------------|----------|-----------------------------------------|
| <b>0.97±0.25±0.02</b>    | 38   | <sup>1</sup> ABLIKIM | 06T BES2 | $\psi(2S) \rightarrow \gamma 2K^+ 2K^-$ |

NODE=M056R01  
 NODE=M056R01

<sup>1</sup> ABLIKIM 06T reports  $(1.03 \pm 0.22 \pm 0.15) \times 10^{-3}$  from a measurement of  $[\Gamma(\chi_{c0}(1P) \rightarrow K^+ K^- \phi)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))]$  assuming  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.2 \pm 0.4) \times 10^{-2}$ , which we rescale to our best value  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.75 \pm 0.22) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.

NODE=M056R01;LINKAGE=AB

 $\Gamma(\bar{K}^0 K^+ \pi^- \phi + \text{c.c.})/\Gamma_{\text{total}}$  $\Gamma_{53}/\Gamma$ 

| VALUE (units $10^{-3}$ ) | DOCUMENT ID | TECN     | COMMENT                                 |
|--------------------------|-------------|----------|-----------------------------------------|
| <b>3.68±0.30±0.50</b>    | ABLIKIM     | 15M BES3 | $\psi(2S) \rightarrow \gamma \chi_{c0}$ |

NODE=M056R90  
 NODE=M056R90

 $\Gamma(K^+ K^- \pi^0 \phi)/\Gamma_{\text{total}}$  $\Gamma_{54}/\Gamma$ 

| VALUE (units $10^{-3}$ ) | DOCUMENT ID | TECN     | COMMENT                                 |
|--------------------------|-------------|----------|-----------------------------------------|
| <b>1.90±0.14±0.32</b>    | ABLIKIM     | 15M BES3 | $\psi(2S) \rightarrow \gamma \chi_{c0}$ |

NODE=M056R91  
 NODE=M056R91

 $\Gamma(\phi \pi^+ \pi^- \pi^0)/\Gamma_{\text{total}}$  $\Gamma_{56}/\Gamma$ 

| VALUE (units $10^{-3}$ ) | EVTS | DOCUMENT ID          | TECN     | COMMENT                                                     |
|--------------------------|------|----------------------|----------|-------------------------------------------------------------|
| <b>1.18±0.07±0.13</b>    | 538  | <sup>1</sup> ABLIKIM | 13B BES3 | $e^+ e^- \rightarrow \psi(2S) \rightarrow \gamma \chi_{c0}$ |

NODE=M056R88  
 NODE=M056R88

<sup>1</sup> Using  $1.06 \times 10^8 \psi(2S)$  mesons and  $B(\psi(2S) \rightarrow \chi_{c0} \gamma) = (9.68 \pm 0.31)\%$ .

NODE=M056R88;LINKAGE=A

 $\Gamma(\phi \phi)/\Gamma_{\text{total}}$  $\Gamma_{57}/\Gamma$ 

| VALUE (units $10^{-3}$ )   | EVTS | DOCUMENT ID          | TECN     | COMMENT                                       |
|----------------------------|------|----------------------|----------|-----------------------------------------------|
| <b>0.848±0.031 OUR FIT</b> |      |                      |          |                                               |
| <b>0.859±0.027±0.020</b>   | 2701 | <sup>1</sup> ABLIKIM | 23N BES3 | $\psi(2S) \rightarrow \gamma \text{ hadrons}$ |

NODE=M056R16  
 NODE=M056R16

<sup>1</sup> Measured using  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.75 \pm 0.24) \times 10^{-2}$  and  $B(\phi \rightarrow K^+ K^-) = (49.2 \pm 0.5) \times 10^{-2}$  from PDG 22.

NODE=M056R16;LINKAGE=A

 $\Gamma(\phi \phi \eta)/\Gamma_{\text{total}}$  $\Gamma_{58}/\Gamma$ 

| VALUE (units $10^{-4}$ ) | EVTS  | DOCUMENT ID          | TECN     | COMMENT                                      |
|--------------------------|-------|----------------------|----------|----------------------------------------------|
| <b>8.4±1.0±0.2</b>       | 186.6 | <sup>1</sup> ABLIKIM | 20B BES3 | $\psi(2S) \rightarrow \gamma \phi \phi \eta$ |

NODE=M056R98  
 NODE=M056R98

<sup>1</sup> ABLIKIM 20B reports  $(8.41 \pm 0.74 \pm 0.62) \times 10^{-4}$  from a measurement of  $[\Gamma(\chi_{c0}(1P) \rightarrow \phi \phi \eta)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))]$  assuming  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.79 \pm 0.20) \times 10^{-2}$ , which we rescale to our best value  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.75 \pm 0.22) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.

NODE=M056R98;LINKAGE=A

 $\Gamma(p \bar{p} \pi^0)/\Gamma_{\text{total}}$  $\Gamma_{60}/\Gamma$ 

| VALUE (units $10^{-3}$ )     | DOCUMENT ID                         | TECN    | COMMENT                                   |
|------------------------------|-------------------------------------|---------|-------------------------------------------|
| <b>0.70±0.07 OUR AVERAGE</b> | Error includes scale factor of 1.3. |         |                                           |
| 0.73±0.06±0.02               | <sup>1</sup> ONYISI                 | 10 CLE3 | $\psi(2S) \rightarrow \gamma p \bar{p} X$ |
| 0.56±0.12±0.01               | <sup>2</sup> ATHAR                  | 07 CLEO | $\psi(2S) \rightarrow \gamma h^+ h^- h^0$ |

NODE=M056R06  
 NODE=M056R06

<sup>1</sup> ONYISI 10 reports  $(7.76 \pm 0.37 \pm 0.51 \pm 0.39) \times 10^{-4}$  from a measurement of  $[\Gamma(\chi_{c0}(1P) \rightarrow p\bar{p}\pi^0)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))]$  assuming  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$ , which we rescale to our best value  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.75 \pm 0.22) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.

NODE=M056R06;LINKAGE=ON

<sup>2</sup> ATHAR 07 reports  $(0.59 \pm 0.10 \pm 0.08) \times 10^{-3}$  from a measurement of  $[\Gamma(\chi_{c0}(1P) \rightarrow p\bar{p}\pi^0)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))]$  assuming  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$ , which we rescale to our best value  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.75 \pm 0.22) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.

NODE=M056R06;LINKAGE=AT

 **$\Gamma(p\bar{p}\eta)/\Gamma_{\text{total}}$**  **$\Gamma_{61}/\Gamma$** VALUE (units  $10^{-3}$ )

DOCUMENT ID

TECN

COMMENT

**0.36±0.04 OUR AVERAGE**

0.35±0.04±0.01

<sup>1</sup> ONYISI

10

CLE3

 $\psi(2S) \rightarrow \gamma p\bar{p}X$ 

0.37±0.11±0.01

<sup>2</sup> ATHAR

07

CLEO

 $\psi(2S) \rightarrow \gamma h^+ h^- h^0$ 

<sup>1</sup> ONYISI 10 reports  $(3.73 \pm 0.38 \pm 0.28 \pm 0.19) \times 10^{-4}$  from a measurement of  $[\Gamma(\chi_{c0}(1P) \rightarrow p\bar{p}\eta)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))]$  assuming  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$ , which we rescale to our best value  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.75 \pm 0.22) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.

NODE=M056R50;LINKAGE=ON

<sup>2</sup> ATHAR 07 reports  $(0.39 \pm 0.11 \pm 0.04) \times 10^{-3}$  from a measurement of  $[\Gamma(\chi_{c0}(1P) \rightarrow p\bar{p}\eta)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))]$  assuming  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$ , which we rescale to our best value  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.75 \pm 0.22) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.

NODE=M056R50;LINKAGE=AT

 **$\Gamma(p\bar{p}\omega)/\Gamma_{\text{total}}$**  **$\Gamma_{62}/\Gamma$** VALUE (units  $10^{-3}$ )

DOCUMENT ID

TECN

COMMENT

**0.53±0.06±0.01**<sup>1</sup> ONYISI

10

CLE3

 $\psi(2S) \rightarrow \gamma p\bar{p}X$ 

<sup>1</sup> ONYISI 10 reports  $(5.57 \pm 0.48 \pm 0.42 \pm 0.14) \times 10^{-4}$  from a measurement of  $[\Gamma(\chi_{c0}(1P) \rightarrow p\bar{p}\omega)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))]$  assuming  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$ , which we rescale to our best value  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.75 \pm 0.22) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.

NODE=M056R70  
NODE=M056R70

NODE=M056R70;LINKAGE=ON

 **$\Gamma(p\bar{p}\phi)/\Gamma_{\text{total}}$**  **$\Gamma_{63}/\Gamma$** VALUE (units  $10^{-5}$ )

EVTS

DOCUMENT ID

TECN

COMMENT

**6.0±1.4±0.1**

42 ± 8

<sup>1</sup> ABLIKIM

11F

BES3

 $\psi(2S) \rightarrow \gamma p\bar{p}K^+ K^-$ 

<sup>1</sup> ABLIKIM 11F reports  $(6.12 \pm 1.18 \pm 0.86) \times 10^{-5}$  from a measurement of  $[\Gamma(\chi_{c0}(1P) \rightarrow p\bar{p}\phi)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))]$  assuming  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.62 \pm 0.31) \times 10^{-2}$ , which we rescale to our best value  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.75 \pm 0.22) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.

NODE=M056R75  
NODE=M056R75

NODE=M056R75;LINKAGE=AB

 **$\Gamma(p\bar{p}\pi^+\pi^-)/\Gamma_{\text{total}}$**  **$\Gamma_{64}/\Gamma$** VALUE (units  $10^{-3}$ )

DOCUMENT ID

TECN

COMMENT

**2.1 ±0.7 OUR EVALUATION**

Error includes scale factor of 1.4. Treating systematic error as correlated.

**2.1 ±1.0 OUR AVERAGE** Error includes scale factor of 2.0.

1.57±0.21±0.53

<sup>1</sup> BAI

99B

BES

 $\psi(2S) \rightarrow \gamma\chi_{c0}$ 

4.20±1.15±0.18

<sup>1</sup> TANENBAUM

78

MRK1

 $\psi(2S) \rightarrow \gamma\chi_{c0}$ 

<sup>1</sup> Rescaled by us using  $B(\psi(2S) \rightarrow \gamma\chi_{c0}) = (9.4 \pm 0.4)\%$  and  $B(\psi(2S) \rightarrow J/\psi(1S)\pi^+\pi^-) = (32.6 \pm 0.5)\%$ .

NODE=M056R7  
NODE=M056R7

→ UNCHECKED ←

NODE=M056R7;LINKAGE=X1

 **$\Gamma(p\bar{p}\pi^0\pi^0)/\Gamma_{\text{total}}$**  **$\Gamma_{65}/\Gamma$** 

VALUE (%)

EVTS

DOCUMENT ID

TECN

COMMENT

**0.104±0.028±0.002**

39.5

<sup>1</sup> HE

08B

CLEO

 $e^+e^- \rightarrow \gamma h^+ h^- h^0 h^0$ 

<sup>1</sup> HE 08B reports  $0.11 \pm 0.02 \pm 0.02 \pm 0.01\%$  from a measurement of  $[\Gamma(\chi_{c0}(1P) \rightarrow p\bar{p}\pi^0\pi^0)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))]$  assuming  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$ , which we rescale to our best value  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.75 \pm 0.22) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.

NODE=M056R65  
NODE=M056R65

NODE=M056R65;LINKAGE=HE

$\Gamma(p\bar{p}K^+K^- \text{ (non-resonant)})/\Gamma_{\text{total}}$  $\Gamma_{66}/\Gamma$ 

| VALUE (units $10^{-4}$ ) | EVTs   | DOCUMENT ID          | TECN     | COMMENT                                      |
|--------------------------|--------|----------------------|----------|----------------------------------------------|
| <b>1.22±0.26±0.03</b>    | 48 ± 8 | <sup>1</sup> ABLIKIM | 11F BES3 | $\psi(2S) \rightarrow \gamma p\bar{p}K^+K^-$ |

NODE=M056R72  
 NODE=M056R72

<sup>1</sup> ABLIKIM 11F reports  $(1.24 \pm 0.20 \pm 0.18) \times 10^{-4}$  from a measurement of  $[\Gamma(\chi_{c0}(1P) \rightarrow p\bar{p}K^+K^- \text{ (non-resonant)})/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))]$  assuming  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.62 \pm 0.31) \times 10^{-2}$ , which we rescale to our best value  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.75 \pm 0.22) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.

NODE=M056R72;LINKAGE=AB

 $\Gamma(p\bar{p}K_S^0K_S^0)/\Gamma_{\text{total}}$  $\Gamma_{67}/\Gamma$ 

| VALUE (units $10^{-4}$ ) | CL% | DOCUMENT ID          | TECN     | COMMENT                                |
|--------------------------|-----|----------------------|----------|----------------------------------------|
| <b>&lt;8.8</b>           | 90  | <sup>1</sup> ABLIKIM | 06D BES2 | $\psi(2S) \rightarrow \chi_{c0}\gamma$ |

NODE=M056R46  
 NODE=M056R46

<sup>1</sup> Using  $B(\psi(2S) \rightarrow \chi_{c0}\gamma) = (9.2 \pm 0.5)\%$

NODE=M056R;LINKAGE=AB

 $\Gamma(p\bar{n}\pi^-)/\Gamma_{\text{total}}$  $\Gamma_{69}/\Gamma$ 

| VALUE (units $10^{-4}$ )    | EVTs | DOCUMENT ID          | TECN     | COMMENT                                     |
|-----------------------------|------|----------------------|----------|---------------------------------------------|
| <b>12.7±1.1 OUR AVERAGE</b> |      |                      |          |                                             |
| 12.9±1.1±0.3                | 5150 | <sup>1</sup> ABLIKIM | 12J BES3 | $\psi(2S) \rightarrow \gamma p\bar{n}\pi^-$ |
| 11.3±3.1±0.3                |      | <sup>2</sup> ABLIKIM | 06I BES2 | $\psi(2S) \rightarrow \gamma p\pi^- X$      |

NODE=M056R49  
 NODE=M056R49

<sup>1</sup> ABLIKIM 12J reports  $[\Gamma(\chi_{c0}(1P) \rightarrow p\bar{n}\pi^-)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))] = (1.26 \pm 0.02 \pm 0.11) \times 10^{-4}$  which we divide by our best value  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.75 \pm 0.22) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.

NODE=M056R49;LINKAGE=AL

<sup>2</sup> ABLIKIM 06I reports  $[\Gamma(\chi_{c0}(1P) \rightarrow p\bar{n}\pi^-)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))] = (1.10 \pm 0.24 \pm 0.18) \times 10^{-4}$  which we divide by our best value  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.75 \pm 0.22) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.

NODE=M056R49;LINKAGE=AB

 $\Gamma(\bar{p}n\pi^+)/\Gamma_{\text{total}}$  $\Gamma_{70}/\Gamma$ 

| VALUE (units $10^{-4}$ ) | EVTs | DOCUMENT ID          | TECN     | COMMENT                                    |
|--------------------------|------|----------------------|----------|--------------------------------------------|
| <b>13.7±1.2±0.3</b>      | 5808 | <sup>1</sup> ABLIKIM | 12J BES3 | $\psi(2S) \rightarrow \gamma\bar{p}n\pi^+$ |

NODE=M056R82  
 NODE=M056R82

<sup>1</sup> ABLIKIM 12J reports  $[\Gamma(\chi_{c0}(1P) \rightarrow \bar{p}n\pi^+)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))] = (1.34 \pm 0.03 \pm 0.11) \times 10^{-4}$  which we divide by our best value  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.75 \pm 0.22) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.

NODE=M056R82;LINKAGE=AL

 $\Gamma(p\bar{n}\pi^-\pi^0)/\Gamma_{\text{total}}$  $\Gamma_{71}/\Gamma$ 

| VALUE (units $10^{-4}$ ) | EVTs | DOCUMENT ID          | TECN     | COMMENT                                          |
|--------------------------|------|----------------------|----------|--------------------------------------------------|
| <b>23.5±2.0±0.5</b>      | 2480 | <sup>1</sup> ABLIKIM | 12J BES3 | $\psi(2S) \rightarrow \gamma p\bar{n}\pi^-\pi^0$ |

NODE=M056R83  
 NODE=M056R83

<sup>1</sup> ABLIKIM 12J reports  $[\Gamma(\chi_{c0}(1P) \rightarrow p\bar{n}\pi^-\pi^0)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))] = (2.29 \pm 0.08 \pm 0.18) \times 10^{-4}$  which we divide by our best value  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.75 \pm 0.22) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.

NODE=M056R83;LINKAGE=AL

 $\Gamma(\bar{p}n\pi^+\pi^0)/\Gamma_{\text{total}}$  $\Gamma_{72}/\Gamma$ 

| VALUE (units $10^{-4}$ ) | EVTs | DOCUMENT ID          | TECN     | COMMENT                                         |
|--------------------------|------|----------------------|----------|-------------------------------------------------|
| <b>22.2±1.8±0.5</b>      | 2757 | <sup>1</sup> ABLIKIM | 12J BES3 | $\psi(2S) \rightarrow \gamma\bar{p}n\pi^+\pi^0$ |

NODE=M056R84  
 NODE=M056R84

<sup>1</sup> ABLIKIM 12J reports  $[\Gamma(\chi_{c0}(1P) \rightarrow \bar{p}n\pi^+\pi^0)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))] = (2.16 \pm 0.07 \pm 0.16) \times 10^{-4}$  which we divide by our best value  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.75 \pm 0.22) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.

NODE=M056R84;LINKAGE=AL

 $\Gamma(\Lambda\bar{\Lambda}\pi^+\pi^-)/\Gamma_{\text{total}}$  $\Gamma_{74}/\Gamma$ 

| VALUE (units $10^{-5}$ ) | CL% | EVTs | DOCUMENT ID          | TECN     | COMMENT                                                     |
|--------------------------|-----|------|----------------------|----------|-------------------------------------------------------------|
| <b>118±12±3</b>          |     | 426  | <sup>1</sup> ABLIKIM | 12I BES3 | $\psi(2S) \rightarrow \gamma\Lambda\bar{\Lambda}\pi^+\pi^-$ |

NODE=M056R44  
 NODE=M056R44

• • • We do not use the following data for averages, fits, limits, etc. • • •

|      |    |                      |          |                                        |
|------|----|----------------------|----------|----------------------------------------|
| <400 | 90 | <sup>2</sup> ABLIKIM | 06D BES2 | $\psi(2S) \rightarrow \chi_{c0}\gamma$ |
|------|----|----------------------|----------|----------------------------------------|

<sup>1</sup> ABLIKIM 12I reports  $(119.0 \pm 6.4 \pm 11.4) \times 10^{-5}$  from a measurement of  $[\Gamma(\chi_{c0}(1P) \rightarrow \Lambda\bar{\Lambda}\pi^+\pi^-)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))]$  assuming  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.68 \pm 0.31) \times 10^{-2}$ , which we rescale to our best value  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.75 \pm 0.22) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.

NODE=M056R44;LINKAGE=AL

<sup>2</sup> Using  $B(\psi(2S) \rightarrow \chi_{c0}\gamma) = (9.2 \pm 0.5)\%$

NODE=M056R44;LINKAGE=AB

$\Gamma(\Lambda\bar{\Lambda}\pi^+\pi^- \text{ (non-resonant)})/\Gamma_{\text{total}}$  $\Gamma_{75}/\Gamma$ 

| VALUE (units $10^{-5}$ )                                                                                                                                                                                                                                                                                                                                                                                                                               | CL% | DOCUMENT ID          | TECN     | COMMENT                                                     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|----------------------|----------|-------------------------------------------------------------|
| <b>&lt;50</b>                                                                                                                                                                                                                                                                                                                                                                                                                                          | 90  | <sup>1</sup> ABLIKIM | 12I BES3 | $\psi(2S) \rightarrow \gamma\Lambda\bar{\Lambda}\pi^+\pi^-$ |
| <sup>1</sup> ABLIKIM 12I reports $< 54 \times 10^{-5}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \rightarrow \Lambda\bar{\Lambda}\pi^+\pi^- \text{ (non-resonant)})/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.68 \pm 0.31) \times 10^{-2}$ , which we rescale to our best value $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = 9.75 \times 10^{-2}$ . |     |                      |          |                                                             |

NODE=M056R77  
 NODE=M056R77

NODE=M056R77;LINKAGE=AL

 $\Gamma(\Sigma(1385)^+\bar{\Lambda}\pi^- + \text{c.c.})/\Gamma_{\text{total}}$  $\Gamma_{76}/\Gamma$ 

| VALUE (units $10^{-5}$ )                                                                                                                                                                                                                                                                                                                                                                                                                        | CL% | DOCUMENT ID          | TECN     | COMMENT                                                       |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|----------------------|----------|---------------------------------------------------------------|
| <b>&lt;50</b>                                                                                                                                                                                                                                                                                                                                                                                                                                   | 90  | <sup>1</sup> ABLIKIM | 12I BES3 | $\psi(2S) \rightarrow \gamma\Sigma(1385)^+\bar{\Lambda}\pi^-$ |
| <sup>1</sup> ABLIKIM 12I reports $< 55 \times 10^{-5}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \rightarrow \Sigma(1385)^+\bar{\Lambda}\pi^- + \text{c.c.})/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.68 \pm 0.31) \times 10^{-2}$ , which we rescale to our best value $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = 9.75 \times 10^{-2}$ . |     |                      |          |                                                               |

NODE=M056R78  
 NODE=M056R78

NODE=M056R78;LINKAGE=AL

 $\Gamma(\Sigma(1385)^-\bar{\Lambda}\pi^+ + \text{c.c.})/\Gamma_{\text{total}}$  $\Gamma_{77}/\Gamma$ 

| VALUE (units $10^{-5}$ )                                                                                                                                                                                                                                                                                                                                                                                                                        | CL% | DOCUMENT ID          | TECN     | COMMENT                                                       |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|----------------------|----------|---------------------------------------------------------------|
| <b>&lt;50</b>                                                                                                                                                                                                                                                                                                                                                                                                                                   | 90  | <sup>1</sup> ABLIKIM | 12I BES3 | $\psi(2S) \rightarrow \gamma\Sigma(1385)^-\bar{\Lambda}\pi^+$ |
| <sup>1</sup> ABLIKIM 12I reports $< 50 \times 10^{-5}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \rightarrow \Sigma(1385)^-\bar{\Lambda}\pi^+ + \text{c.c.})/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.68 \pm 0.31) \times 10^{-2}$ , which we rescale to our best value $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = 9.75 \times 10^{-2}$ . |     |                      |          |                                                               |

NODE=M056R79  
 NODE=M056R79

NODE=M056R79;LINKAGE=AL

 $\Gamma(K^+\bar{p}\Lambda + \text{c.c.})/\Gamma_{\text{total}}$  $\Gamma_{81}/\Gamma$ 

| VALUE (units $10^{-3}$ )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | EVTS | DOCUMENT ID                         | TECN     | COMMENT                                        |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-------------------------------------|----------|------------------------------------------------|
| <b>1.25±0.12 OUR AVERAGE</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |      | Error includes scale factor of 1.3. |          |                                                |
| 1.31±0.09±0.03                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 9k   | <sup>1,2</sup> ABLIKIM              | 13D BES3 | $\psi(2S) \rightarrow \gamma\Lambda\bar{p}K^+$ |
| 1.01±0.19±0.02                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |      | <sup>3</sup> ATHAR                  | 07 CLEO  | $\psi(2S) \rightarrow \gamma h^+ h^- h^0$      |
| <sup>1</sup> ABLIKIM 13D reports $(1.32 \pm 0.03 \pm 0.10) \times 10^{-3}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \rightarrow K^+\bar{p}\Lambda + \text{c.c.})/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.68 \pm 0.31) \times 10^{-2}$ , which we rescale to our best value $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.75 \pm 0.22) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.       |      |                                     |          |                                                |
| <sup>2</sup> Using $B(\Lambda \rightarrow p\pi^-) = 63.9\%$ .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |      |                                     |          |                                                |
| <sup>3</sup> ATHAR 07 reports $(1.07 \pm 0.17 \pm 0.12) \times 10^{-3}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \rightarrow K^+\bar{p}\Lambda + \text{c.c.})/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$ , which we rescale to our best value $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.75 \pm 0.22) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value. |      |                                     |          |                                                |

NODE=M056R07  
 NODE=M056R07

NODE=M056R07;LINKAGE=AB

NODE=M056R07;LINKAGE=LB  
 NODE=M056R07;LINKAGE=AT

 $\Gamma(K^*(892)^+\bar{p}\Lambda + \text{c.c.})/\Gamma_{\text{total}}$  $\Gamma_{83}/\Gamma$ 

| VALUE (units $10^{-4}$ )                                                                                                                                                                                                                                                                                                                                                                                                                                                  | EVTS | DOCUMENT ID          | TECN      | COMMENT                                            |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|----------------------|-----------|----------------------------------------------------|
| <b>4.8±0.9±0.1</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 254  | <sup>1</sup> ABLIKIM | 19AU BES3 | $\psi(2S) \rightarrow \gamma K^{*+}\bar{p}\Lambda$ |
| <sup>1</sup> ABLIKIM 19AU reports $[\Gamma(\chi_{c0}(1P) \rightarrow K^*(892)^+\bar{p}\Lambda + \text{c.c.})/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))]$ $= (4.7 \pm 0.7 \pm 0.5) \times 10^{-5}$ which we divide by our best value $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.75 \pm 0.22) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value. |      |                      |           |                                                    |

NODE=M056R99  
 NODE=M056R99

NODE=M056R99;LINKAGE=A

 $\Gamma(K^+\bar{p}\Lambda(1520) + \text{c.c.})/\Gamma_{\text{total}}$  $\Gamma_{84}/\Gamma$ 

| VALUE (units $10^{-4}$ )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | EVTS    | DOCUMENT ID          | TECN     | COMMENT                                      |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----------------------|----------|----------------------------------------------|
| <b>3.0±0.7±0.1</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 62 ± 12 | <sup>1</sup> ABLIKIM | 11F BES3 | $\psi(2S) \rightarrow \gamma p\bar{p}K^+K^-$ |
| <sup>1</sup> ABLIKIM 11F reports $(3.00 \pm 0.58 \pm 0.50) \times 10^{-4}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \rightarrow K^+\bar{p}\Lambda(1520) + \text{c.c.})/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.62 \pm 0.31) \times 10^{-2}$ , which we rescale to our best value $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.75 \pm 0.22) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value. |         |                      |          |                                              |

NODE=M056R73  
 NODE=M056R73

NODE=M056R73;LINKAGE=AB

$\Gamma(nK_S^0 \bar{\Lambda} + \text{c.c.})/\Gamma_{\text{total}}$  $\Gamma_{82}/\Gamma$ 

| VALUE (units $10^{-4}$ )                         | EVTS | DOCUMENT ID          | TECN      | COMMENT                                                           |
|--------------------------------------------------|------|----------------------|-----------|-------------------------------------------------------------------|
| <b>6.7<math>\pm</math>0.5<math>\pm</math>0.2</b> | 1284 | <sup>1</sup> ABLIKIM | 21AV BES3 | $\psi(2S) \rightarrow \gamma n K_S^0 \bar{\Lambda} + \text{c.c.}$ |

NODE=M056P02  
 NODE=M056P02

<sup>1</sup> ABLIKIM 21AV reports  $(6.65 \pm 0.26 \pm 0.41) \times 10^{-4}$  from a measurement of  $[\Gamma(\chi_{c0}(1P) \rightarrow n K_S^0 \bar{\Lambda} + \text{c.c.})/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))]$  assuming  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = 0.0979 \pm 0.0020$ , which we rescale to our best value  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.75 \pm 0.22) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value. Also uses  $B(\bar{\Lambda} \rightarrow \bar{p} \pi^+) = (63.9 \pm 0.5)\%$  and  $B(K_S^0 \rightarrow \pi^+ \pi^-) = (69.20 \pm 0.05)\%$ .

NODE=M056P02;LINKAGE=A

 $\Gamma(\Lambda(1520) \bar{\Lambda}(1520))/\Gamma_{\text{total}}$  $\Gamma_{86}/\Gamma$ 

| VALUE (units $10^{-4}$ )                         | EVTS        | DOCUMENT ID          | TECN     | COMMENT                                         |
|--------------------------------------------------|-------------|----------------------|----------|-------------------------------------------------|
| <b>3.1<math>\pm</math>1.2<math>\pm</math>0.1</b> | 28 $\pm$ 10 | <sup>1</sup> ABLIKIM | 11F BES3 | $\psi(2S) \rightarrow \gamma p \bar{p} K^+ K^-$ |

NODE=M056R74  
 NODE=M056R74

<sup>1</sup> ABLIKIM 11F reports  $(3.18 \pm 1.11 \pm 0.53) \times 10^{-4}$  from a measurement of  $[\Gamma(\chi_{c0}(1P) \rightarrow \Lambda(1520) \bar{\Lambda}(1520))/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))]$  assuming  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.62 \pm 0.31) \times 10^{-2}$ , which we rescale to our best value  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.75 \pm 0.22) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.

NODE=M056R74;LINKAGE=AB

 $\Gamma(\Sigma^0 \bar{\Sigma}^0)/\Gamma_{\text{total}}$  $\Gamma_{87}/\Gamma$ 

| VALUE (units $10^{-4}$ )                    | EVTS | DOCUMENT ID | TECN | COMMENT |
|---------------------------------------------|------|-------------|------|---------|
| <b>4.70<math>\pm</math>0.32 OUR AVERAGE</b> |      |             |      |         |

NODE=M056R59  
 NODE=M056R59

4.84 $\pm$ 0.34 $\pm$ 0.11      1046      <sup>1</sup> ABLIKIM      18V BES3       $\psi(2S) \rightarrow \gamma \Sigma^0 \bar{\Sigma}^0$

4.2  $\pm$ 0.7  $\pm$ 0.1      78  $\pm$  10      <sup>2</sup> NAIK      08 CLEO       $\psi(2S) \rightarrow \gamma \Sigma^0 \bar{\Sigma}^0$

• • • We do not use the following data for averages, fits, limits, etc. • • •

4.7  $\pm$ 0.5  $\pm$ 0.1      243      <sup>3,4</sup> ABLIKIM      13H BES3       $\psi(2S) \rightarrow \gamma \Sigma^0 \bar{\Sigma}^0$

<sup>1</sup> ABLIKIM 18V reports  $[\Gamma(\chi_{c0}(1P) \rightarrow \Sigma^0 \bar{\Sigma}^0)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))]$  =  $(4.72 \pm 0.18 \pm 0.28) \times 10^{-5}$  which we divide by our best value  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.75 \pm 0.22) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.

NODE=M056R59;LINKAGE=A

<sup>2</sup> NAIK 08 reports  $(4.41 \pm 0.56 \pm 0.47) \times 10^{-4}$  from a measurement of  $[\Gamma(\chi_{c0}(1P) \rightarrow \Sigma^0 \bar{\Sigma}^0)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))]$  assuming  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$ , which we rescale to our best value  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.75 \pm 0.22) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.

NODE=M056R59;LINKAGE=NA

<sup>3</sup> ABLIKIM 13H reports  $(4.78 \pm 0.34 \pm 0.39) \times 10^{-4}$  from a measurement of  $[\Gamma(\chi_{c0}(1P) \rightarrow \Sigma^0 \bar{\Sigma}^0)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))]$  assuming  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.62 \pm 0.31) \times 10^{-2}$ , which we rescale to our best value  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.75 \pm 0.22) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.

NODE=M056R59;LINKAGE=AB

<sup>4</sup> Superseded by ABLIKIM 18V

NODE=M056R59;LINKAGE=B

 $\Gamma(\Sigma^+ \bar{\Sigma}^-)/\Gamma_{\text{total}}$  $\Gamma_{90}/\Gamma$ 

| VALUE (units $10^{-4}$ )                   | EVTS | DOCUMENT ID | TECN | COMMENT                             |
|--------------------------------------------|------|-------------|------|-------------------------------------|
| <b>4.7 <math>\pm</math>0.8 OUR AVERAGE</b> |      |             |      | Error includes scale factor of 2.6. |

NODE=M056R60  
 NODE=M056R60

5.12 $\pm$ 0.35 $\pm$ 0.12      747      <sup>1</sup> ABLIKIM      18V BES3       $\psi(2S) \rightarrow \gamma \Sigma^+ \bar{\Sigma}^-$

3.1  $\pm$ 0.7  $\pm$ 0.1      39  $\pm$  7      <sup>2</sup> NAIK      08 CLEO       $\psi(2S) \rightarrow \gamma \Sigma^+ \bar{\Sigma}^-$

• • • We do not use the following data for averages, fits, limits, etc. • • •

4.5  $\pm$ 0.5  $\pm$ 0.1      148      <sup>3,4</sup> ABLIKIM      13H BES3       $\psi(2S) \rightarrow \gamma \Sigma^+ \bar{\Sigma}^-$

<sup>1</sup> ABLIKIM 18V reports  $[\Gamma(\chi_{c0}(1P) \rightarrow \Sigma^+ \bar{\Sigma}^-)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))]$  =  $(4.99 \pm 0.24 \pm 0.24) \times 10^{-5}$  which we divide by our best value  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.75 \pm 0.22) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.

NODE=M056R60;LINKAGE=A

<sup>2</sup> NAIK 08 reports  $(3.25 \pm 0.57 \pm 0.43) \times 10^{-4}$  from a measurement of  $[\Gamma(\chi_{c0}(1P) \rightarrow \Sigma^+ \bar{\Sigma}^-)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))]$  assuming  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$ , which we rescale to our best value  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.75 \pm 0.22) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.

NODE=M056R60;LINKAGE=NA

<sup>3</sup> ABLIKIM 13H reports  $(4.54 \pm 0.42 \pm 0.30) \times 10^{-4}$  from a measurement of  $[\Gamma(\chi_{c0}(1P) \rightarrow \Sigma^+ \bar{\Sigma}^-)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))]$  assuming  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.62 \pm 0.31) \times 10^{-2}$ , which we rescale to our best value  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.75 \pm 0.22) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.

NODE=M056R60;LINKAGE=AB

<sup>4</sup> Superseded by ABLIKIM 18V

NODE=M056R60;LINKAGE=B

$\Gamma(\Sigma^+ \bar{\Sigma}^- \eta)/\Gamma_{\text{total}}$  $\Gamma_{91}/\Gamma$ 

| VALUE (units $10^{-5}$ )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | EVTs | DOCUMENT ID          | TECN      | COMMENT                                     |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|----------------------|-----------|---------------------------------------------|
| <b>12.7±2.4±0.3</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 74   | <sup>1</sup> ABLIKIM | 24CA BES3 | $\psi(2S) \rightarrow \gamma \chi_{c0}(1P)$ |
| <sup>1</sup> ABLIKIM 24CA reports $(12.6 \pm 2.0 \pm 1.3) \times 10^{-5}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \rightarrow \Sigma^+ \bar{\Sigma}^- \eta)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))]$ assuming $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.79 \pm 0.20) \times 10^{-2}$ , which we rescale to our best value $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.75 \pm 0.22) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value. |      |                      |           |                                             |

NODE=M056P12  
 NODE=M056P12

OCCUR=3

NODE=M056P12;LINKAGE=A

 $\Gamma(\Sigma^- \bar{\Sigma}^+)/\Gamma_{\text{total}}$  $\Gamma_{92}/\Gamma$ 

| VALUE (units $10^{-4}$ )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | EVTs | DOCUMENT ID          | TECN     | COMMENT                                               |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|----------------------|----------|-------------------------------------------------------|
| <b>5.2±0.5±0.1</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 2143 | <sup>1</sup> ABLIKIM | 20I BES3 | $\psi(2S) \rightarrow \gamma \Sigma^- \bar{\Sigma}^+$ |
| <sup>1</sup> ABLIKIM 20I reports $(5.13 \pm 0.24 \pm 0.41) \times 10^{-4}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \rightarrow \Sigma^- \bar{\Sigma}^+)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))]$ assuming $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.79 \pm 0.20) \times 10^{-2}$ , which we rescale to our best value $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.75 \pm 0.22) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value. |      |                      |          |                                                       |

NODE=M056P00  
 NODE=M056P00

NODE=M056P00;LINKAGE=A

 $\Gamma(\Sigma(1385)^+ \bar{\Sigma}(1385)^-)/\Gamma_{\text{total}}$  $\Gamma_{93}/\Gamma$ 

| VALUE (units $10^{-5}$ )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | EVTs | DOCUMENT ID          | TECN     | COMMENT                                                         |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|----------------------|----------|-----------------------------------------------------------------|
| <b>16.3±5.9±0.4</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 27   | <sup>1</sup> ABLIKIM | 12I BES3 | $\psi(2S) \rightarrow \gamma \Lambda \bar{\Lambda} \pi^+ \pi^-$ |
| <sup>1</sup> ABLIKIM 12I reports $(16.4 \pm 5.7 \pm 1.6) \times 10^{-5}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \rightarrow \Sigma(1385)^+ \bar{\Sigma}(1385)^-)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))]$ assuming $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.68 \pm 0.31) \times 10^{-2}$ , which we rescale to our best value $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.75 \pm 0.22) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value. |      |                      |          |                                                                 |

NODE=M056R80  
 NODE=M056R80

NODE=M056R80;LINKAGE=AL

 $\Gamma(\Sigma(1385)^- \bar{\Sigma}(1385)^+)/\Gamma_{\text{total}}$  $\Gamma_{94}/\Gamma$ 

| VALUE (units $10^{-5}$ )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | EVTs | DOCUMENT ID          | TECN     | COMMENT                                                         |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|----------------------|----------|-----------------------------------------------------------------|
| <b>23±7±1</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 33   | <sup>1</sup> ABLIKIM | 12I BES3 | $\psi(2S) \rightarrow \gamma \Lambda \bar{\Lambda} \pi^+ \pi^-$ |
| <sup>1</sup> ABLIKIM 12I reports $(23.5 \pm 6.2 \pm 2.3) \times 10^{-5}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \rightarrow \Sigma(1385)^- \bar{\Sigma}(1385)^+)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))]$ assuming $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.68 \pm 0.31) \times 10^{-2}$ , which we rescale to our best value $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.75 \pm 0.22) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value. |      |                      |          |                                                                 |

NODE=M056R81  
 NODE=M056R81

NODE=M056R81;LINKAGE=AL

 $\Gamma(K^- \Lambda \bar{\Xi}^+ + \text{c.c.})/\Gamma_{\text{total}}$  $\Gamma_{95}/\Gamma$ 

| VALUE (units $10^{-4}$ )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | EVTs | DOCUMENT ID          | TECN     | COMMENT                                                             |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|----------------------|----------|---------------------------------------------------------------------|
| <b>1.95±0.35±0.04</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 57   | <sup>1</sup> ABLIKIM | 15I BES3 | $\psi(2S) \rightarrow \gamma K^- \Lambda \bar{\Xi}^+ + \text{c.c.}$ |
| <sup>1</sup> ABLIKIM 15I reports $[\Gamma(\chi_{c0}(1P) \rightarrow K^- \Lambda \bar{\Xi}^+ + \text{c.c.})/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))]$ assuming $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (1.90 \pm 0.30 \pm 0.16) \times 10^{-5}$ which we divide by our best value $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.75 \pm 0.22) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value. |      |                      |          |                                                                     |

NODE=M056R92  
 NODE=M056R92

NODE=M056R92;LINKAGE=A

 $\Gamma(\Xi^0 \bar{\Xi}^0)/\Gamma_{\text{total}}$  $\Gamma_{96}/\Gamma$ 

| VALUE (units $10^{-4}$ )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | EVTs                                | DOCUMENT ID          | TECN     | COMMENT                                         |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|----------------------|----------|-------------------------------------------------|
| <b>4.5 ±0.5 OUR AVERAGE</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Error includes scale factor of 1.7. |                      |          |                                                 |
| 4.69±0.31±0.11                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1741                                | <sup>1</sup> ABLIKIM | 220 BES3 | $\psi(2S) \rightarrow \gamma \Xi^0 \bar{\Xi}^0$ |
| 3.2 ±0.8 ±0.1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 23.3 ±4.9                           | <sup>2</sup> NAIK    | 08 CLEO  | $\psi(2S) \rightarrow \gamma \Xi^0 \bar{\Xi}^0$ |
| <sup>1</sup> ABLIKIM 220 reports $(4.67 \pm 0.19 \pm 0.26) \times 10^{-4}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \rightarrow \Xi^0 \bar{\Xi}^0)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))]$ assuming $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.79 \pm 0.2) \times 10^{-2}$ , which we rescale to our best value $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.75 \pm 0.22) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.       |                                     |                      |          |                                                 |
| <sup>2</sup> NAIK 08 reports $(3.34 \pm 0.70 \pm 0.48) \times 10^{-4}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \rightarrow \Xi^0 \bar{\Xi}^0)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))]$ assuming $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$ , which we rescale to our best value $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.75 \pm 0.22) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value. |                                     |                      |          |                                                 |

NODE=M056R61  
 NODE=M056R61

NODE=M056R61;LINKAGE=A

NODE=M056R61;LINKAGE=NA

$\Gamma(\Xi^- \Xi^+)/\Gamma_{\text{total}}$  $\Gamma_{97}/\Gamma$ 

| VALUE (units $10^{-4}$ )       | CL% | EVTS | DOCUMENT ID          | TECN     | COMMENT                                   |
|--------------------------------|-----|------|----------------------|----------|-------------------------------------------|
| <b>4.48 ± 0.20 OUR AVERAGE</b> |     |      |                      |          |                                           |
| 4.45 ± 0.18 ± 0.10             |     | 4932 | <sup>1</sup> ABLIKIM | 220 BES3 | $\psi(2S) \rightarrow \gamma \Xi^- \Xi^+$ |
| 4.9 ± 0.7 ± 0.1                |     | 95   | <sup>2</sup> NAIK    | 08 CLEO  | $\psi(2S) \rightarrow \gamma \Xi^+ \Xi^-$ |

• • • We do not use the following data for averages, fits, limits, etc. • • •

- <10.3 90 <sup>3</sup> ABLIKIM 06D BES2  $\psi(2S) \rightarrow \chi_{c0} \gamma$
- <sup>1</sup> ABLIKIM 220 reports  $(4.43 \pm 0.08 \pm 0.18) \times 10^{-4}$  from a measurement of  $[\Gamma(\chi_{c0}(1P) \rightarrow \Xi^- \Xi^+)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))]$  assuming  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.79 \pm 0.2) \times 10^{-2}$ , which we rescale to our best value  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.75 \pm 0.22) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.
- <sup>2</sup> NAIK 08 reports  $(5.14 \pm 0.60 \pm 0.47) \times 10^{-4}$  from a measurement of  $[\Gamma(\chi_{c0}(1P) \rightarrow \Xi^- \Xi^+)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))]$  assuming  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$ , which we rescale to our best value  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.75 \pm 0.22) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.
- <sup>3</sup> Using  $B(\psi(2S) \rightarrow \chi_{c0} \gamma) = (9.2 \pm 0.5)\%$

NODE=M056R45  
NODE=M056R45

NODE=M056R45;LINKAGE=A

NODE=M056R45;LINKAGE=NA

NODE=M056R45;LINKAGE=AB

 $\Gamma(\Omega^- \bar{\Omega}^+)/\Gamma_{\text{total}}$  $\Gamma_{98}/\Gamma$ 

| VALUE (units $10^{-5}$ )  | EVTS | DOCUMENT ID | TECN     | COMMENT                                         |
|---------------------------|------|-------------|----------|-------------------------------------------------|
| <b>3.51 ± 0.54 ± 0.29</b> | 284  | ABLIKIM     | 23T BES3 | $\chi_{cJ} \rightarrow \Omega^- \bar{\Omega}^+$ |

NODE=M056P04  
NODE=M056P04

 $\Gamma(\eta_c \pi^+ \pi^-)/\Gamma_{\text{total}}$  $\Gamma_{99}/\Gamma$ 

| VALUE                           | CL% | DOCUMENT ID            | TECN     | COMMENT                                                     |
|---------------------------------|-----|------------------------|----------|-------------------------------------------------------------|
| <b>&lt; 7 × 10<sup>-4</sup></b> | 90  | <sup>1,2</sup> ABLIKIM | 13B BES3 | $e^+ e^- \rightarrow \psi(2S) \rightarrow \gamma \chi_{c0}$ |

• • • We do not use the following data for averages, fits, limits, etc. • • •

- <41 × 10<sup>-4</sup> 90 <sup>1,3</sup> ABLIKIM 13B BES3  $e^+ e^- \rightarrow \psi(2S) \rightarrow \gamma \chi_{c0}$
- <sup>1</sup> Using  $1.06 \times 10^8 \psi(2S)$  mesons and  $B(\psi(2S) \rightarrow \chi_{c0} \gamma) = (9.68 \pm 0.31)\%$ .
- <sup>2</sup> From the  $\eta_c \rightarrow K_S^0 K^\pm \pi^\mp$  decays.
- <sup>3</sup> From the  $\eta_c \rightarrow K^+ K^- \pi^0$  decays.

NODE=M056R89  
NODE=M056R89

OCCUR=2

NODE=M056R89;LINKAGE=A

NODE=M056R89;LINKAGE=B

NODE=M056R89;LINKAGE=C

 $\Gamma(p\bar{p})/\Gamma_{\text{total}} \times \Gamma(\pi\pi)/\Gamma_{\text{total}}$  $\Gamma_{59}/\Gamma \times \Gamma_{32}/\Gamma$ 

| VALUE (units $10^{-7}$ )  | DOCUMENT ID                         | TECN    | COMMENT                                                   |
|---------------------------|-------------------------------------|---------|-----------------------------------------------------------|
| <b>18.9 ± 1.6 OUR FIT</b> | Error includes scale factor of 1.5. |         |                                                           |
| <b>15.3 ± 2.4 ± 0.8</b>   | <sup>1</sup> ANDREOTTI              | 03 E835 | $\bar{p} p \rightarrow \chi_{c0} \rightarrow \pi^0 \pi^0$ |

<sup>1</sup> We have multiplied  $B(p\bar{p}) \cdot B(\pi^0 \pi^0)$  measurement by 3 to obtain  $B(p\bar{p}) \cdot B(\pi\pi)$ .

NODE=M056R21  
NODE=M056R21

NODE=M056R;LINKAGE=AD

 $\Gamma(p\bar{p})/\Gamma_{\text{total}} \times \Gamma(\pi^0 \eta)/\Gamma_{\text{total}}$  $\Gamma_{59}/\Gamma \times \Gamma_{33}/\Gamma$ 

| VALUE (units $10^{-7}$ ) | DOCUMENT ID | TECN     | COMMENT                            |
|--------------------------|-------------|----------|------------------------------------|
| <b>&lt; 0.4</b>          | ANDREOTTI   | 05C E835 | $\bar{p} p \rightarrow \pi^0 \eta$ |

NODE=M056R41  
NODE=M056R41

 $\Gamma(p\bar{p})/\Gamma_{\text{total}} \times \Gamma(\pi^0 \eta')/\Gamma_{\text{total}}$  $\Gamma_{59}/\Gamma \times \Gamma_{34}/\Gamma$ 

| VALUE (units $10^{-7}$ ) | DOCUMENT ID | TECN     | COMMENT                            |
|--------------------------|-------------|----------|------------------------------------|
| <b>&lt; 2.5</b>          | ANDREOTTI   | 05C E835 | $\bar{p} p \rightarrow \pi^0 \eta$ |

NODE=M056R42  
NODE=M056R42

 $\Gamma(p\bar{p})/\Gamma_{\text{total}} \times \Gamma(\eta\eta)/\Gamma_{\text{total}}$  $\Gamma_{59}/\Gamma \times \Gamma_{36}/\Gamma$ 

| VALUE (units $10^{-7}$ )                       | DOCUMENT ID                         | TECN     | COMMENT                          |
|------------------------------------------------|-------------------------------------|----------|----------------------------------|
| <b>6.7 ± 0.7 OUR FIT</b>                       | Error includes scale factor of 1.4. |          |                                  |
| <b>4.0 ± 1.2<sup>+0.5</sup><sub>-0.3</sub></b> | ANDREOTTI                           | 05C E835 | $\bar{p} p \rightarrow \eta\eta$ |

NODE=M056R40  
NODE=M056R40

 $\Gamma(p\bar{p})/\Gamma_{\text{total}} \times \Gamma(\eta\eta')/\Gamma_{\text{total}}$  $\Gamma_{59}/\Gamma \times \Gamma_{37}/\Gamma$ 

| VALUE (units $10^{-6}$ )                 | DOCUMENT ID | TECN     | COMMENT                            |
|------------------------------------------|-------------|----------|------------------------------------|
| <b>2.1<sup>+2.3</sup><sub>-1.5</sub></b> | ANDREOTTI   | 05C E835 | $\bar{p} p \rightarrow \pi^0 \eta$ |

NODE=M056R43  
NODE=M056R43

## RADIATIVE DECAYS

NODE=M056310

$\Gamma(\gamma\rho^0)/\Gamma_{\text{total}}$  $\Gamma_{101}/\Gamma$ 

| VALUE (units $10^{-6}$ ) | CL% | EVTS | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|------|-------------|------|---------|
|--------------------------|-----|------|-------------|------|---------|

|     |    |               |                      |          |                                           |
|-----|----|---------------|----------------------|----------|-------------------------------------------|
| < 9 | 90 | $1.2 \pm 4.5$ | <sup>1</sup> BENNETT | 08A CLEO | $\psi(2S) \rightarrow \gamma\gamma\rho^0$ |
|-----|----|---------------|----------------------|----------|-------------------------------------------|

• • • We do not use the following data for averages, fits, limits, etc. • • •

|     |    |            |                      |          |                                           |
|-----|----|------------|----------------------|----------|-------------------------------------------|
| <10 | 90 | $6 \pm 12$ | <sup>2</sup> ABLIKIM | 11E BES3 | $\psi(2S) \rightarrow \gamma\gamma\rho^0$ |
|-----|----|------------|----------------------|----------|-------------------------------------------|

<sup>1</sup> BENNETT 08A reports  $< 9.6 \times 10^{-6}$  from a measurement of  $[\Gamma(\chi_{c0}(1P) \rightarrow \gamma\rho^0)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))]$  assuming  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.2 \pm 0.4) \times 10^{-2}$ , which we rescale to our best value  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = 9.75 \times 10^{-2}$ .

NODE=M056R56;LINKAGE=BE

<sup>2</sup> ABLIKIM 11E reports  $< 10.5 \times 10^{-6}$  from a measurement of  $[\Gamma(\chi_{c0}(1P) \rightarrow \gamma\rho^0)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))]$  assuming  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.62 \pm 0.31) \times 10^{-2}$ , which we rescale to our best value  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = 9.75 \times 10^{-2}$ .

NODE=M056R56;LINKAGE=AB

 $\Gamma(\gamma\omega)/\Gamma_{\text{total}}$  $\Gamma_{102}/\Gamma$ 

| VALUE (units $10^{-6}$ ) | CL% | EVTS | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|------|-------------|------|---------|
|--------------------------|-----|------|-------------|------|---------|

|     |    |               |                      |          |                                           |
|-----|----|---------------|----------------------|----------|-------------------------------------------|
| < 8 | 90 | $0.0 \pm 2.8$ | <sup>1</sup> BENNETT | 08A CLEO | $\psi(2S) \rightarrow \gamma\gamma\omega$ |
|-----|----|---------------|----------------------|----------|-------------------------------------------|

• • • We do not use the following data for averages, fits, limits, etc. • • •

|     |    |            |                      |          |                                           |
|-----|----|------------|----------------------|----------|-------------------------------------------|
| <13 | 90 | $5 \pm 11$ | <sup>2</sup> ABLIKIM | 11E BES3 | $\psi(2S) \rightarrow \gamma\gamma\omega$ |
|-----|----|------------|----------------------|----------|-------------------------------------------|

<sup>1</sup> BENNETT 08A reports  $< 8.8 \times 10^{-6}$  from a measurement of  $[\Gamma(\chi_{c0}(1P) \rightarrow \gamma\omega)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))]$  assuming  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.2 \pm 0.4) \times 10^{-2}$ , which we rescale to our best value  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = 9.75 \times 10^{-2}$ .

NODE=M056R57;LINKAGE=BE

<sup>2</sup> ABLIKIM 11E reports  $< 12.9 \times 10^{-6}$  from a measurement of  $[\Gamma(\chi_{c0}(1P) \rightarrow \gamma\omega)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))]$  assuming  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.62 \pm 0.31) \times 10^{-2}$ , which we rescale to our best value  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = 9.75 \times 10^{-2}$ .

NODE=M056R57;LINKAGE=AB

 $\Gamma(\gamma\phi)/\Gamma_{\text{total}}$  $\Gamma_{103}/\Gamma$ 

| VALUE (units $10^{-6}$ ) | CL% | EVTS | DOCUMENT ID | TECN | COMMENT |
|--------------------------|-----|------|-------------|------|---------|
|--------------------------|-----|------|-------------|------|---------|

|     |    |               |                      |          |                                         |
|-----|----|---------------|----------------------|----------|-----------------------------------------|
| < 6 | 90 | $0.1 \pm 1.6$ | <sup>1</sup> BENNETT | 08A CLEO | $\psi(2S) \rightarrow \gamma\gamma\phi$ |
|-----|----|---------------|----------------------|----------|-----------------------------------------|

• • • We do not use the following data for averages, fits, limits, etc. • • •

|     |    |            |                      |          |                                         |
|-----|----|------------|----------------------|----------|-----------------------------------------|
| <16 | 90 | $15 \pm 7$ | <sup>2</sup> ABLIKIM | 11E BES3 | $\psi(2S) \rightarrow \gamma\gamma\phi$ |
|-----|----|------------|----------------------|----------|-----------------------------------------|

<sup>1</sup> BENNETT 08A reports  $< 6.4 \times 10^{-6}$  from a measurement of  $[\Gamma(\chi_{c0}(1P) \rightarrow \gamma\phi)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))]$  assuming  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.2 \pm 0.4) \times 10^{-2}$ , which we rescale to our best value  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = 9.75 \times 10^{-2}$ .

NODE=M056R58;LINKAGE=BE

<sup>2</sup> ABLIKIM 11E reports  $< 16.2 \times 10^{-6}$  from a measurement of  $[\Gamma(\chi_{c0}(1P) \rightarrow \gamma\phi)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))]$  assuming  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.62 \pm 0.31) \times 10^{-2}$ , which we rescale to our best value  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = 9.75 \times 10^{-2}$ .

NODE=M056R58;LINKAGE=AB

 $\Gamma(e^+e^-J/\psi(1S))/\Gamma_{\text{total}}$  $\Gamma_{105}/\Gamma$ 

| VALUE (units $10^{-4}$ ) | EVTS | DOCUMENT ID | TECN | COMMENT |
|--------------------------|------|-------------|------|---------|
|--------------------------|------|-------------|------|---------|

• • • We do not use the following data for averages, fits, limits, etc. • • •

|                          |    |                        |          |                                            |
|--------------------------|----|------------------------|----------|--------------------------------------------|
| $1.55 \pm 0.33 \pm 0.03$ | 56 | <sup>1,2</sup> ABLIKIM | 17I BES3 | $\psi(2S) \rightarrow \gamma e^+e^-J/\psi$ |
|--------------------------|----|------------------------|----------|--------------------------------------------|

<sup>1</sup> ABLIKIM 17I reports  $(1.51 \pm 0.30 \pm 0.13) \times 10^{-4}$  from a measurement of  $[\Gamma(\chi_{c0}(1P) \rightarrow e^+e^-J/\psi(1S))/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))]$  assuming  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.99 \pm 0.27) \times 10^{-2}$ , which we rescale to our best value  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.75 \pm 0.22) \times 10^{-2}$ . Our first error is their experiment's error and our second error is the systematic error from using our best value.

NODE=M056R93;LINKAGE=B

<sup>2</sup> Not independent from other measurements reported by ABLIKIM 17I

NODE=M056R93;LINKAGE=C

 $\Gamma(e^+e^-J/\psi(1S))/\Gamma(\gamma J/\psi(1S))$  $\Gamma_{105}/\Gamma_{100}$ 

| VALUE (units $10^{-3}$ ) | EVTS | DOCUMENT ID | TECN | COMMENT |
|--------------------------|------|-------------|------|---------|
|--------------------------|------|-------------|------|---------|

|                       |    |                      |          |                                            |
|-----------------------|----|----------------------|----------|--------------------------------------------|
| $9.5 \pm 1.9 \pm 0.7$ | 56 | <sup>1</sup> ABLIKIM | 17I BES3 | $\psi(2S) \rightarrow e^+e^-\gamma J/\psi$ |
|-----------------------|----|----------------------|----------|--------------------------------------------|

<sup>1</sup> Uses  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) \times B(\chi_{c0}(1P) \rightarrow \gamma J/\psi(1S)) = (15.8 \pm 0.3 \pm 0.6) \times 10^{-4}$  from ABLIKIM 17N and accounts for common systematic errors.

NODE=M056R94  
NODE=M056R94

NODE=M056R94;LINKAGE=A

 $\Gamma(\mu^+\mu^-J/\psi(1S))/\Gamma(e^+e^-J/\psi(1S))$  $\Gamma_{106}/\Gamma_{105}$ 

| VALUE | CL% | EVTS | DOCUMENT ID | TECN | COMMENT |
|-------|-----|------|-------------|------|---------|
|-------|-----|------|-------------|------|---------|

|       |    |      |         |          |                                                                          |
|-------|----|------|---------|----------|--------------------------------------------------------------------------|
| <0.14 | 90 | <9.5 | ABLIKIM | 19Z BES3 | $\psi(2S) \rightarrow \gamma\chi_c \rightarrow \gamma(\mu^+\mu^-J/\psi)$ |
|-------|----|------|---------|----------|--------------------------------------------------------------------------|

NODE=M056R97  
NODE=M056R97

$$\Gamma(\gamma\gamma)/\Gamma(\gamma J/\psi(1S))$$

$$\Gamma_{104}/\Gamma_{100}$$

VALUE (units  $10^{-2}$ )

DOCUMENT ID

TECN

COMMENT

**1.46±0.13 OUR FIT** Error includes scale factor of 1.6.

**2.0 ±0.4 OUR AVERAGE**

2.2 ±0.4  $^{+0.1}_{-0.2}$

<sup>1</sup> ANDREOTTI 04 E835  $p\bar{p} \rightarrow \chi_{c0} \rightarrow \gamma\gamma$

1.45±0.74

<sup>2</sup> AMBROGIANI 00B E835  $\bar{p}p \rightarrow \chi_{c2} \rightarrow \gamma\gamma, \gamma J/\psi$

<sup>1</sup> The values of  $B(p\bar{p})B(\gamma\gamma)$  and  $B(\gamma\gamma)B(\gamma J/\psi)$  measured by ANDREOTTI 04 are not independent. The latter is used in the fit because of smaller systematics.

<sup>2</sup> Calculated by us using  $B(J/\psi(1S) \rightarrow e^+e^-) = 0.0593 \pm 0.0010$ .

NODE=M056R18  
NODE=M056R18

NODE=M056R;LINKAGE=AN

NODE=M056R;LINKAGE=7A

$$\Gamma(p\bar{p})/\Gamma_{\text{total}} \times \Gamma(\gamma J/\psi(1S))/\Gamma_{\text{total}}$$

$$\Gamma_{59}/\Gamma \times \Gamma_{100}/\Gamma$$

VALUE (units  $10^{-7}$ )

EVTS

DOCUMENT ID

TECN

COMMENT

**31.2±2.2 OUR FIT** Error includes scale factor of 1.4.

**28.2±2.1 OUR AVERAGE**

28.0±1.9±1.3

392

<sup>1,2,3</sup>

BAGNASCO

02

E835

$\bar{p}p \rightarrow \chi_{c0} \rightarrow J/\psi\gamma$

29.3  $^{+5.7}_{-4.7}$  ±1.5

89

<sup>1,2</sup>

AMBROGIANI

99B

E835

$\bar{p}p \rightarrow \chi_{c0} \rightarrow J/\psi\gamma$

<sup>1</sup> Values in  $(\Gamma(p\bar{p}) \times \Gamma(\gamma J/\psi(1S))/\Gamma_{\text{total}})$  and  $(\Gamma(p\bar{p})/\Gamma_{\text{total}} \times \Gamma(\gamma J/\psi(1S))/\Gamma_{\text{total}})$  are not independent. The latter is used in the fit since it is less correlated to the total width.

<sup>2</sup> Calculated by us using  $B(J/\psi(1S) \rightarrow e^+e^-) = 0.0593 \pm 0.0010$ .

<sup>3</sup> Recalculated by ANDREOTTI 05A.

NODE=M056R19  
NODE=M056R19

NODE=M056R;LINKAGE=KS

NODE=M056R19;LINKAGE=7A  
NODE=M056R19;LINKAGE=AN

### $\chi_{c0}(1P)$ CROSS-PARTICLE BRANCHING RATIOS

NODE=M056230

$$\Gamma(\chi_{c0}(1P) \rightarrow 2(\pi^+\pi^-))/\Gamma_{\text{total}} \times \Gamma(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))/\Gamma(\psi(2S) \rightarrow J/\psi(1S)\pi^+\pi^-)$$

$$\Gamma_1/\Gamma \times \Gamma_{181}^{\psi(2S)}/\Gamma_{12}^{\psi(2S)}$$

VALUE (units  $10^{-3}$ )

DOCUMENT ID

TECN

COMMENT

**6.12±0.26 OUR FIT** Error includes scale factor of 1.1.

**6.9 ±2.4 OUR AVERAGE** Error includes scale factor of 3.8.

4.4 ±0.1 ±0.9

<sup>1</sup>

BAI

99B

BES

$\psi(2S) \rightarrow \gamma\chi_{c0}$

9.3 ±0.9

<sup>2</sup>

TANENBAUM

78

MRK1

$\psi(2S) \rightarrow \gamma\chi_{c0}$

<sup>1</sup> Calculated by us. The value for  $B(\chi_{c0} \rightarrow 2\pi^+2\pi^-)$  reported in BAI 99B is derived using  $B(\psi(2S) \rightarrow \gamma\chi_{c0}) = (9.3 \pm 0.8)\%$  and  $B(\psi(2S) \rightarrow J/\psi(1S)\pi^+\pi^-) = (32.4 \pm 2.6)\%$  [BAI 98D].

<sup>2</sup> The value  $B(\psi(1S) \rightarrow \gamma\chi_{c0}) \times B(\chi_{c0} \rightarrow 2\pi^+2\pi^-)$  reported in TANENBAUM 78 is derived using  $B(\psi(2S) \rightarrow J/\psi(1S)\pi^+\pi^-) \times B(J/\psi(1S) \rightarrow \ell^+\ell^-) = (4.6 \pm 0.7)\%$ . Calculated by us using  $B(J/\psi(1S) \rightarrow \ell^+\ell^-) = 0.1181 \pm 0.0020$ .

NODE=M056B4  
NODE=M056B4

NODE=M056B;LINKAGE=B2

NODE=M056B;LINKAGE=J1

$$\Gamma(\chi_{c0}(1P) \rightarrow 2(\pi^+\pi^-))/\Gamma_{\text{total}} \times \Gamma(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))/\Gamma_{\text{total}}$$

$$\Gamma_1/\Gamma \times \Gamma_{181}^{\psi(2S)}/\Gamma_{12}^{\psi(2S)}$$

VALUE (units  $10^{-3}$ )

EVTS

DOCUMENT ID

TECN

COMMENT

**2.12 ±0.09 OUR FIT** Error includes scale factor of 1.1.

**2.082±0.002±0.089**

1946k

<sup>1</sup>

ABLIKIM

24BT

BES3

$\psi(2S) \rightarrow \gamma\chi_{c0}$

<sup>1</sup> Calculated by us. The value given here is derived from the value of  $B(\chi_{c0} \rightarrow 2(\pi^+\pi^-))$  reported in ABLIKIM 24BT using  $B(\psi(2S) \rightarrow \gamma\chi_{c0}) = (9.79 \pm 0.20)\%$  [PDG 22].

NODE=M056P09  
NODE=M056P09

NODE=M056P09;LINKAGE=A

$$\Gamma(\chi_{c0}(1P) \rightarrow \pi^+\pi^-K^+K^-)/\Gamma_{\text{total}} \times \Gamma(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))/\Gamma_{\text{total}}$$

$$\Gamma_8/\Gamma \times \Gamma_{181}^{\psi(2S)}/\Gamma_{12}^{\psi(2S)}$$

VALUE (units  $10^{-3}$ )

DOCUMENT ID

TECN

COMMENT

**1.77±0.15 OUR FIT** Error includes scale factor of 1.1.

**1.64±0.05±0.2**

ABLIKIM

05Q

BES2

$\psi(2S) \rightarrow \gamma\chi_{c0}$

NODE=M056B18  
NODE=M056B18

$$\Gamma(\chi_{c0}(1P) \rightarrow \pi^+\pi^-K^+K^-)/\Gamma_{\text{total}} \times \Gamma(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))/\Gamma(\psi(2S) \rightarrow J/\psi(1S)\pi^+\pi^-)$$

$$\Gamma_8/\Gamma \times \Gamma_{181}^{\psi(2S)}/\Gamma_{12}^{\psi(2S)}$$

VALUE (units  $10^{-3}$ )

DOCUMENT ID

TECN

COMMENT

**5.1 ±0.4 OUR FIT** Error includes scale factor of 1.1.

**5.8 ±1.6 OUR AVERAGE** Error includes scale factor of 2.3.

4.22±0.20±0.97

BAI

99B

BES

$\psi(2S) \rightarrow \gamma\chi_{c0}$

7.4 ±1.0

<sup>1</sup>

TANENBAUM

78

MRK1

$\psi(2S) \rightarrow \gamma\chi_{c0}$

<sup>1</sup> The reported value is derived using  $B(\psi(2S) \rightarrow \pi^+\pi^-J/\psi) \times B(J/\psi \rightarrow \ell^+\ell^-) = (4.6 \pm 0.7)\%$ . Calculated by us using  $B(J/\psi \rightarrow \ell^+\ell^-) = 0.1181 \pm 0.0020$ .

NODE=M056B19  
NODE=M056B19

NODE=M056B19;LINKAGE=TA

$$\frac{\Gamma(\chi_{c0}(1P) \rightarrow \pi\pi)/\Gamma_{\text{total}} \times \Gamma(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))/\Gamma_{\text{total}}}{\Gamma_{32}/\Gamma \times \Gamma_{181}^{\psi(2S)}/\Gamma\psi(2S)}$$

VALUE (units  $10^{-4}$ ) EVTS DOCUMENT ID TECN COMMENT

**8.33±0.34 OUR FIT** Error includes scale factor of 1.2.

**8.80±0.34 OUR AVERAGE**

|                |      |                      |     |      |                                                           |
|----------------|------|----------------------|-----|------|-----------------------------------------------------------|
| 9.11±0.08±0.65 | 17k  | <sup>1</sup> ABLIKIM | 10A | BES3 | $e^+e^- \rightarrow \psi(2S) \rightarrow \gamma\chi_{c0}$ |
| 8.81±0.11±0.43 | 8.9k | <sup>2</sup> ASNER   | 09  | CLEO | $\psi(2S) \rightarrow \gamma\pi^+\pi^-$                   |
| 8.13±0.19±0.89 | 2.8k | <sup>3</sup> ASNER   | 09  | CLEO | $\psi(2S) \rightarrow \gamma\pi^0\pi^0$                   |

NODE=M056B22  
NODE=M056B22

OCCUR=2

NODE=M056B22;LINKAGE=AB

NODE=M056B22;LINKAGE=AS

NODE=M056B22;LINKAGE=AN

- <sup>1</sup> Calculated by us. ABLIKIM 10A reports  $B(\chi_{c0} \rightarrow \pi^0\pi^0) = (3.23 \pm 0.03 \pm 0.23 \pm 0.14) \times 10^{-3}$  using  $B(\psi(2S) \rightarrow \gamma\chi_{c0}) = (9.4 \pm 0.4)\%$ . We have multiplied the  $\pi^0\pi^0$  measurement by 3 to obtain  $\pi\pi$ .
- <sup>2</sup> Calculated by us. ASNER 09 reports  $B(\chi_{c0} \rightarrow \pi^+\pi^-) = (6.37 \pm 0.08 \pm 0.31 \pm 0.32) \times 10^{-3}$  using  $B(\psi(2S) \rightarrow \gamma\chi_{c0}) = (9.22 \pm 0.11 \pm 0.46)\%$ . We have multiplied the  $\pi^+\pi^-$  measurement by 3/2 to obtain  $\pi\pi$ .
- <sup>3</sup> Calculated by us. ASNER 09 reports  $B(\chi_{c0} \rightarrow \pi^0\pi^0) = (2.94 \pm 0.07 \pm 0.32 \pm 0.15) \times 10^{-3}$  using  $B(\psi(2S) \rightarrow \gamma\chi_{c0}) = (9.22 \pm 0.11 \pm 0.46)\%$ . We have multiplied the  $\pi^0\pi^0$  measurement by 3 to obtain  $\pi\pi$ .

$$\frac{\Gamma(\chi_{c0}(1P) \rightarrow \pi\pi)/\Gamma_{\text{total}} \times \Gamma(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))/\Gamma(\psi(2S) \rightarrow J/\psi(1S)\pi^+\pi^-)}{\Gamma_{32}/\Gamma \times \Gamma_{181}^{\psi(2S)}/\Gamma_{12}^{\psi(2S)}}$$

VALUE (units  $10^{-4}$ ) EVTS DOCUMENT ID TECN COMMENT

**24.0±1.0 OUR FIT** Error includes scale factor of 1.2.

**20.7±1.7 OUR AVERAGE**

|              |          |                  |     |     |                                                                     |
|--------------|----------|------------------|-----|-----|---------------------------------------------------------------------|
| 23.9±2.7±4.1 | 97 ± 11  | <sup>1</sup> BAI | 03C | BES | $\psi(2S) \rightarrow \gamma\chi_{c0} \rightarrow \gamma\pi^0\pi^0$ |
| 20.2±1.1±1.5 | 720 ± 32 | <sup>2</sup> BAI | 98I | BES | $\psi(2S) \rightarrow \gamma\chi_{c0} \rightarrow \gamma\pi^+\pi^-$ |

NODE=M056B5  
NODE=M056B5

NODE=M056B;LINKAGE=D1

NODE=M056B;LINKAGE=D2

- <sup>1</sup> We have multiplied  $\pi^0\pi^0$  measurement by 3 to obtain  $\pi\pi$ .
- <sup>2</sup> Calculated by us. The value for  $B(\chi_{c0} \rightarrow \pi^+\pi^-)$  reported in BAI 98I is derived using  $B(\psi' \rightarrow \gamma\chi_{c0}) = (9.3 \pm 0.8)\%$  and  $B(\psi' \rightarrow J/\psi\pi^+\pi^-) = (32.4 \pm 2.6)\%$  [BAI 98D]. We have multiplied  $\pi^+\pi^-$  measurement by 3/2 to obtain  $\pi\pi$ .

$$\frac{\Gamma(\chi_{c0}(1P) \rightarrow \eta\eta)/\Gamma_{\text{total}} \times \Gamma(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))/\Gamma_{\text{total}}}{\Gamma_{36}/\Gamma \times \Gamma_{181}^{\psi(2S)}/\Gamma\psi(2S)}$$

VALUE (units  $10^{-4}$ ) EVTS DOCUMENT ID TECN COMMENT

**2.94±0.22 OUR FIT** Error includes scale factor of 1.2.

**3.12±0.19 OUR AVERAGE**

|                |      |                      |     |      |                                                           |
|----------------|------|----------------------|-----|------|-----------------------------------------------------------|
| 3.23±0.09±0.23 | 2132 | <sup>1</sup> ABLIKIM | 10A | BES3 | $e^+e^- \rightarrow \psi(2S) \rightarrow \gamma\chi_{c0}$ |
| 2.93±0.12±0.29 | 0.9k | <sup>2</sup> ASNER   | 09  | CLEO | $\psi(2S) \rightarrow \gamma\eta\eta$                     |
| 2.86±0.46±0.37 | 48   | <sup>3</sup> ADAMS   | 07  | CLEO | $\psi(2S) \rightarrow \gamma\chi_{c0}$                    |

NODE=M056B11  
NODE=M056B11

NODE=M056B11;LINKAGE=AB

NODE=M056B11;LINKAGE=AS

NODE=M056B11;LINKAGE=AD

- <sup>1</sup> Calculated by us. ABLIKIM 10A reports  $B(\chi_{c0} \rightarrow \eta\eta) = (3.44 \pm 0.10 \pm 0.24 \pm 0.13) \times 10^{-3}$  using  $B(\psi(2S) \rightarrow \gamma\chi_{c0}) = (9.4 \pm 0.4)\%$ .
- <sup>2</sup> Calculated by us. ASNER 09 reports  $B(\chi_{c0} \rightarrow \eta\eta) = (3.18 \pm 0.13 \pm 0.31 \pm 0.16) \times 10^{-3}$  using  $B(\psi(2S) \rightarrow \gamma\chi_{c0}) = (9.22 \pm 0.11 \pm 0.46)\%$ .
- <sup>3</sup> Superseded by ASNER 09. Calculated by us. The value of  $B(\chi_{c0}(1P) \rightarrow \eta\eta)$  reported by ADAMS 07 was derived using  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46)\%$  (ATHAR 04).

$$\frac{\Gamma(\chi_{c0}(1P) \rightarrow \eta\eta)/\Gamma_{\text{total}} \times \Gamma(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))/\Gamma(\psi(2S) \rightarrow J/\psi(1S)\pi^+\pi^-)}{\Gamma_{36}/\Gamma \times \Gamma_{181}^{\psi(2S)}/\Gamma_{12}^{\psi(2S)}}$$

VALUE (units  $10^{-3}$ ) DOCUMENT ID TECN COMMENT

**0.85 ±0.06 OUR FIT** Error includes scale factor of 1.2.

**0.578±0.241±0.158**

|     |     |     |                                       |
|-----|-----|-----|---------------------------------------|
| BAI | 03C | BES | $\psi(2S) \rightarrow \gamma\eta\eta$ |
|-----|-----|-----|---------------------------------------|

NODE=M056B10  
NODE=M056B10

$$\frac{\Gamma(\chi_{c0}(1P) \rightarrow K^+K^-)/\Gamma_{\text{total}} \times \Gamma(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))/\Gamma_{\text{total}}}{\Gamma_{42}/\Gamma \times \Gamma_{181}^{\psi(2S)}/\Gamma\psi(2S)}$$

VALUE (units  $10^{-4}$ ) EVTS DOCUMENT ID TECN COMMENT

**5.92±0.28 OUR FIT**

**5.97±0.07±0.32**

|      |                    |    |      |                                      |
|------|--------------------|----|------|--------------------------------------|
| 8.1k | <sup>1</sup> ASNER | 09 | CLEO | $\psi(2S) \rightarrow \gamma K^+K^-$ |
|------|--------------------|----|------|--------------------------------------|

NODE=M056B23  
NODE=M056B23

- <sup>1</sup> Calculated by us. ASNER 09 reports  $B(\chi_{c0} \rightarrow K^+K^-) = (6.47 \pm 0.08 \pm 0.35 \pm 0.32) \times 10^{-3}$  using  $B(\psi(2S) \rightarrow \gamma\chi_{c0}) = (9.22 \pm 0.11 \pm 0.46)\%$ .

NODE=M056B23;LINKAGE=AS

$$\frac{\Gamma(\chi_{c0}(1P) \rightarrow K^+ K^-) / \Gamma_{\text{total}} \times \Gamma(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) / \Gamma(\psi(2S) \rightarrow J/\psi(1S) \pi^+ \pi^-)}{\Gamma_{42} / \Gamma \times \Gamma_{181}^{\psi(2S)} / \Gamma_{12}^{\psi(2S)}}$$

| VALUE (units 10 <sup>-3</sup> ) | EVTS     | DOCUMENT ID      | TECN    | COMMENT                               |
|---------------------------------|----------|------------------|---------|---------------------------------------|
| <b>1.71±0.08 OUR FIT</b>        |          |                  |         |                                       |
| <b>1.63±0.10±0.15</b>           | 774 ± 38 | <sup>1</sup> BAI | 98I BES | $\psi(2S) \rightarrow \gamma K^+ K^-$ |

NODE=M056B9  
NODE=M056B9

<sup>1</sup> Calculated by us. The value for  $B(\chi_{c0} \rightarrow K^+ K^-)$  reported by BAI 98I is derived using  $B(\psi(2S) \rightarrow \gamma \chi_{c0}) = (9.3 \pm 0.8)\%$  and  $B(\psi(2S) \rightarrow J/\psi \pi^+ \pi^-) = (32.4 \pm 2.6)\%$  [BAI 98D].

NODE=M056B9;LINKAGE=BA

$$\frac{\Gamma(\chi_{c0}(1P) \rightarrow K_S^0 K_S^0) / \Gamma_{\text{total}} \times \Gamma(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) / \Gamma_{\text{total}}}{\Gamma_{43} / \Gamma \times \Gamma_{181}^{\psi(2S)} / \Gamma_{12}^{\psi(2S)}}$$

| VALUE (units 10 <sup>-4</sup> ) | EVTS | DOCUMENT ID | TECN | COMMENT |
|---------------------------------|------|-------------|------|---------|
| <b>3.10±0.16 OUR FIT</b>        |      |             |      |         |
| <b>3.18±0.17 OUR AVERAGE</b>    |      |             |      |         |

|                |      |                    |          |                                           |
|----------------|------|--------------------|----------|-------------------------------------------|
| 3.22±0.07±0.17 | 2.1k | <sup>1</sup> ASNER | 09 CLEO  | $\psi(2S) \rightarrow \gamma K_S^0 K_S^0$ |
| 3.02±0.19±0.33 | 322  | ABLIKIM            | 05O BES2 | $\psi(2S) \rightarrow \gamma K_S^0 K_S^0$ |

<sup>1</sup> Calculated by us. ASNER 09 reports  $B(\chi_{c0} \rightarrow K_S^0 K_S^0) = (3.49 \pm 0.08 \pm 0.18 \pm 0.17) \times 10^{-3}$  using  $B(\psi(2S) \rightarrow \gamma \chi_{c0}) = (9.22 \pm 0.11 \pm 0.46)\%$ .

NODE=M056B12  
NODE=M056B12

NODE=M056B12;LINKAGE=AS

$$\frac{\Gamma(\chi_{c0}(1P) \rightarrow K_S^0 K_S^0) / \Gamma_{\text{total}} \times \Gamma(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) / \Gamma(\psi(2S) \rightarrow J/\psi(1S) \pi^+ \pi^-)}{\Gamma_{43} / \Gamma \times \Gamma_{181}^{\psi(2S)} / \Gamma_{12}^{\psi(2S)}}$$

| VALUE (units 10 <sup>-4</sup> ) | DOCUMENT ID      | TECN    | COMMENT                                   |
|---------------------------------|------------------|---------|-------------------------------------------|
| <b>8.9±0.5 OUR FIT</b>          |                  |         |                                           |
| <b>5.6±0.8±1.3</b>              | <sup>1</sup> BAI | 99B BES | $\psi(2S) \rightarrow \gamma K_S^0 K_S^0$ |

<sup>1</sup> Calculated by us. The value of  $B(\chi_{c0} \rightarrow K_S^0 K_S^0)$  reported by BAI 99B was derived using  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.3 \pm 0.8)\%$  and  $B(\psi(2S) \rightarrow J/\psi \pi^+ \pi^-) = (32.4 \pm 2.6)\%$  [BAI 98D].

NODE=M056B13  
NODE=M056B13

NODE=M056B13;LINKAGE=BA

$$\frac{\Gamma(\chi_{c0}(1P) \rightarrow K^+ K^- K^+ K^-) / \Gamma_{\text{total}} \times \Gamma(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) / \Gamma_{\text{total}}}{\Gamma_{51} / \Gamma \times \Gamma_{181}^{\psi(2S)} / \Gamma_{12}^{\psi(2S)}}$$

| VALUE (units 10 <sup>-4</sup> ) | EVTS                                | DOCUMENT ID          | TECN     | COMMENT                                 |
|---------------------------------|-------------------------------------|----------------------|----------|-----------------------------------------|
| <b>2.8 ±0.4 OUR FIT</b>         | Error includes scale factor of 1.5. |                      |          |                                         |
| <b>3.20±0.11±0.41</b>           | 278                                 | <sup>1</sup> ABLIKIM | 06T BES2 | $\psi(2S) \rightarrow \gamma 2K^+ 2K^-$ |

<sup>1</sup> Calculated by us. The value of  $B(\chi_{c0} \rightarrow 2K^+ 2K^-)$  reported by ABLIKIM 06T was derived using  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.2 \pm 0.4)\%$ .

NODE=M056B14  
NODE=M056B14

NODE=M056B14;LINKAGE=AB

$$\frac{\Gamma(\chi_{c0}(1P) \rightarrow K^+ K^- K^+ K^-) / \Gamma_{\text{total}} \times \Gamma(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) / \Gamma(\psi(2S) \rightarrow J/\psi(1S) \pi^+ \pi^-)}{\Gamma_{51} / \Gamma \times \Gamma_{181}^{\psi(2S)} / \Gamma_{12}^{\psi(2S)}}$$

| VALUE (units 10 <sup>-4</sup> ) | DOCUMENT ID                         | TECN    | COMMENT                                 |
|---------------------------------|-------------------------------------|---------|-----------------------------------------|
| <b>8.0±1.2 OUR FIT</b>          | Error includes scale factor of 1.5. |         |                                         |
| <b>6.1±0.8±0.9</b>              | <sup>1</sup> BAI                    | 99B BES | $\psi(2S) \rightarrow \gamma 2K^+ 2K^-$ |

<sup>1</sup> Calculated by us. The value of  $B(\chi_{c0} \rightarrow 2K^+ 2K^-)$  reported by BAI 99B was derived using  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.3 \pm 0.8)\%$  and  $B(\psi(2S) \rightarrow J/\psi \pi^+ \pi^-) = (32.4 \pm 2.6)\%$  [BAI 98D].

NODE=M056B15  
NODE=M056B15

NODE=M056B15;LINKAGE=BA

$$\frac{\Gamma(\chi_{c0}(1P) \rightarrow 3(K^+ K^-)) / \Gamma_{\text{total}} \times \Gamma(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) / \Gamma_{\text{total}}}{\Gamma_{55} / \Gamma \times \Gamma_{181}^{\psi(2S)} / \Gamma_{12}^{\psi(2S)}}$$

| VALUE (units 10 <sup>-7</sup> ) | EVTS       | DOCUMENT ID          | TECN     | COMMENT                        |
|---------------------------------|------------|----------------------|----------|--------------------------------|
| <b>10.5±1.8±1.1</b>             | 37.7 ± 6.2 | <sup>1</sup> ABLIKIM | 24P BES3 | $e^+ e^- \rightarrow \psi(2S)$ |

<sup>1</sup> Systematic error derived by us, based on the text.

NODE=M056P06  
NODE=M056P06

NODE=M056P06;LINKAGE=A

$$\frac{\Gamma(\chi_{c0}(1P) \rightarrow \phi \phi) / \Gamma_{\text{total}} \times \Gamma(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) / \Gamma_{\text{total}}}{\Gamma_{57} / \Gamma \times \Gamma_{181}^{\psi(2S)} / \Gamma_{12}^{\psi(2S)}}$$

| VALUE (units 10 <sup>-4</sup> ) | EVTS | DOCUMENT ID | TECN | COMMENT |
|---------------------------------|------|-------------|------|---------|
| <b>0.827±0.033 OUR FIT</b>      |      |             |      |         |
| <b>0.78 ±0.08 OUR AVERAGE</b>   |      |             |      |         |

|                  |     |                      |          |                                               |
|------------------|-----|----------------------|----------|-----------------------------------------------|
| 0.77 ±0.03 ±0.08 | 612 | <sup>1</sup> ABLIKIM | 11K BES3 | $\psi(2S) \rightarrow \gamma \text{ hadrons}$ |
| 0.86 ±0.19 ±0.12 | 26  | <sup>2</sup> ABLIKIM | 06T BES2 | $\psi(2S) \rightarrow \gamma 2K^+ 2K^-$       |

<sup>1</sup> Calculated by us. The value of  $B(\chi_{c0} \rightarrow \phi \phi)$  reported by ABLIKIM 11K was derived using  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.62 \pm 0.31)\%$ .

<sup>2</sup> Calculated by us. The value of  $B(\chi_{c0} \rightarrow \phi \phi)$  reported by ABLIKIM 06T was derived using  $B(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) = (9.2 \pm 0.4)\%$ .

NODE=M056B16  
NODE=M056B16

NODE=M056B16;LINKAGE=AL

NODE=M056B16;LINKAGE=AB

$$\frac{\Gamma(\chi_{c0}(1P) \rightarrow \phi\phi)/\Gamma_{\text{total}} \times \Gamma(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))/\Gamma(\psi(2S) \rightarrow J/\psi(1S)\pi^+\pi^-)}{\Gamma_{57}/\Gamma \times \Gamma_{181}^{\psi(2S)}/\Gamma_{12}^{\psi(2S)}}$$

| VALUE (units 10 <sup>-4</sup> ) | DOCUMENT ID      | TECN    | COMMENT                                 |
|---------------------------------|------------------|---------|-----------------------------------------|
| <b>2.38±0.10 OUR FIT</b>        |                  |         |                                         |
| <b>2.6 ±1.0 ±1.1</b>            | <sup>1</sup> BAI | 99B BES | $\psi(2S) \rightarrow \gamma 2K^+ 2K^-$ |

NODE=M056B17  
NODE=M056B17

<sup>1</sup> Calculated by us. The value of  $B(\chi_{c0} \rightarrow \phi\phi)$  reported by BAI 99B was derived using  $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.3 \pm 0.8)\%$  and  $B(\psi(2S) \rightarrow J/\psi\pi^+\pi^-) = (32.4 \pm 2.6)\%$  [BAI 98D].

NODE=M056B17;LINKAGE=BA

$$\frac{\Gamma(\chi_{c0}(1P) \rightarrow p\bar{p})/\Gamma_{\text{total}} \times \Gamma(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))/\Gamma_{\text{total}}}{\Gamma_{59}/\Gamma \times \Gamma_{181}^{\psi(2S)}/\Gamma_{12}^{\psi(2S)}}$$

| VALUE (units 10 <sup>-6</sup> ) | EVTS                                | DOCUMENT ID | TECN | COMMENT |
|---------------------------------|-------------------------------------|-------------|------|---------|
| <b>21.6±1.3 OUR FIT</b>         | Error includes scale factor of 1.5. |             |      |         |
| <b>23.7±1.0 OUR AVERAGE</b>     |                                     |             |      |         |

|                                           |                                    |                   |          |                                                                        |
|-------------------------------------------|------------------------------------|-------------------|----------|------------------------------------------------------------------------|
| 23.7±0.8±0.9                              | 1222                               | ABLIKIM           | 13v BES3 | $\psi(2S) \rightarrow \gamma p\bar{p}$                                 |
| 23.7±1.4±1.4                              | 383 ± 22                           | <sup>1</sup> NAIK | 08 CLEO  | $\psi(2S) \rightarrow \gamma p\bar{p}$                                 |
| 23.6 <sup>+3.7</sup> <sub>-3.4</sub> ±3.4 | 89.5 <sup>+14</sup> <sub>-13</sub> | BAI               | 04F BES  | $\psi(2S) \rightarrow \gamma\chi_{c0}(1P) \rightarrow \gamma p\bar{p}$ |

NODE=M056B6  
NODE=M056B6

<sup>1</sup> Calculated by us. NAIK 08 reports  $B(\chi_{c0} \rightarrow p\bar{p}) = (25.7 \pm 1.5 \pm 1.5 \pm 1.3) \times 10^{-5}$  using  $B(\psi(2S) \rightarrow \gamma\chi_{c0}) = (9.22 \pm 0.11 \pm 0.46)\%$ .

NODE=M056B6;LINKAGE=NA

$$\frac{\Gamma(\chi_{c0}(1P) \rightarrow p\bar{p})/\Gamma_{\text{total}} \times \Gamma(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))/\Gamma(\psi(2S) \rightarrow J/\psi(1S)\pi^+\pi^-)}{\Gamma_{59}/\Gamma \times \Gamma_{181}^{\psi(2S)}/\Gamma_{12}^{\psi(2S)}}$$

| VALUE (units 10 <sup>-5</sup> ) | DOCUMENT ID                         | TECN    | COMMENT                                                            |
|---------------------------------|-------------------------------------|---------|--------------------------------------------------------------------|
| <b>6.2±0.4 OUR FIT</b>          | Error includes scale factor of 1.5. |         |                                                                    |
| <b>4.6±1.9</b>                  | <sup>1</sup> BAI                    | 98i BES | $\psi(2S) \rightarrow \gamma\chi_{c0} \rightarrow \gamma p\bar{p}$ |

NODE=M056B1  
NODE=M056B1

<sup>1</sup> Calculated by us. The value for  $B(\chi_{c0} \rightarrow p\bar{p})$  reported in BAI 98i is derived using  $B(\psi(2S) \rightarrow \gamma\chi_{c0}) = (9.3 \pm 0.8)\%$  and  $B(\psi(2S) \rightarrow J/\psi(1S)\pi^+\pi^-) = (32.4 \pm 2.6)\%$  [BAI 98D].

NODE=M056B;LINKAGE=B1

$$\frac{\Gamma(\chi_{c0}(1P) \rightarrow p\bar{p}K_S^0 K^- \pi^+ + \text{c.c.})/\Gamma_{\text{total}} \times \Gamma(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))/\Gamma_{\text{total}}}{\Gamma_{68}/\Gamma \times \Gamma_{181}^{\psi(2S)}/\Gamma_{12}^{\psi(2S)}}$$

| VALUE (units 10 <sup>-6</sup> ) | EVTS | DOCUMENT ID | TECN      | COMMENT                                |
|---------------------------------|------|-------------|-----------|----------------------------------------|
| <b>2.55±0.26±0.31</b>           | 173  | ABLIKIM     | 24BX BES3 | $\psi(2S) \rightarrow \gamma\chi_{c0}$ |

NODE=M056P10  
NODE=M056P10

$$\frac{\Gamma(\chi_{c0}(1P) \rightarrow \bar{p}\Lambda(1520)K_S^0 \pi^+ + \text{c.c.})/\Gamma_{\text{total}} \times \Gamma(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))/\Gamma_{\text{total}}}{\Gamma_{85}/\Gamma \times \Gamma_{181}^{\psi(2S)}/\Gamma_{12}^{\psi(2S)}}$$

| VALUE (units 10 <sup>-6</sup> )                  | EVTS | DOCUMENT ID | TECN      | COMMENT                                |
|--------------------------------------------------|------|-------------|-----------|----------------------------------------|
| <b>1.57<sup>+0.66</sup><sub>-0.62</sub>±0.22</b> | 27   | ABLIKIM     | 24BX BES3 | $\psi(2S) \rightarrow \gamma\chi_{c0}$ |

NODE=M056P11  
NODE=M056P11

$$\frac{\Gamma(\chi_{c0}(1P) \rightarrow \Lambda\bar{\Lambda})/\Gamma_{\text{total}} \times \Gamma(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))/\Gamma_{\text{total}}}{\Gamma_{73}/\Gamma \times \Gamma_{181}^{\psi(2S)}/\Gamma_{12}^{\psi(2S)}}$$

| VALUE (units 10 <sup>-6</sup> ) | EVTS                                | DOCUMENT ID | TECN | COMMENT |
|---------------------------------|-------------------------------------|-------------|------|---------|
| <b>35.2±1.3 OUR FIT</b>         |                                     |             |      |         |
| <b>35.1±1.4 OUR AVERAGE</b>     | Error includes scale factor of 1.1. |             |      |         |

|                                                                               |      |                        |          |                                                   |
|-------------------------------------------------------------------------------|------|------------------------|----------|---------------------------------------------------|
| 35.6±1.0±1.0                                                                  | 1486 | ABLIKIM                | 21L BES3 | $\psi(2S) \rightarrow \gamma p\pi^-\bar{p}\pi^+$  |
| 31.2±3.3±2.0                                                                  | 131  | <sup>1</sup> NAIK      | 08 CLEO  | $\psi(2S) \rightarrow \gamma\Lambda\bar{\Lambda}$ |
| • • • We do not use the following data for averages, fits, limits, etc. • • • |      |                        |          |                                                   |
| 32.0±1.9±2.2                                                                  | 369  | <sup>2,3</sup> ABLIKIM | 13H BES3 | $\psi(2S) \rightarrow \gamma\Lambda\bar{\Lambda}$ |

NODE=M056B20  
NODE=M056B20

<sup>1</sup> Calculated by us. NAIK 08 reports  $B(\chi_{c0} \rightarrow \Lambda\bar{\Lambda}) = (33.8 \pm 3.6 \pm 2.2 \pm 1.7) \times 10^{-5}$  using  $B(\psi(2S) \rightarrow \gamma\chi_{c0}) = (9.22 \pm 0.11 \pm 0.46)\%$ .

NODE=M056B20;LINKAGE=NA

<sup>2</sup> Superseded by ABLIKIM 21L

NODE=M056B20;LINKAGE=A

<sup>3</sup> Calculated by us. ABLIKIM 13H reports  $B(\chi_{c0} \rightarrow \Lambda\bar{\Lambda}) = (33.3 \pm 2.0 \pm 2.6) \times 10^{-5}$  from a measurement of  $B(\chi_{c0} \rightarrow \Lambda\bar{\Lambda}) \times B(\psi(2S) \rightarrow \gamma\chi_{c0})$  assuming  $B(\psi(2S) \rightarrow \gamma\chi_{c0}) = (9.62 \pm 0.31)\%$ .

NODE=M056B20;LINKAGE=AB

$$\frac{\Gamma(\chi_{c0}(1P) \rightarrow \Lambda\bar{\Lambda})/\Gamma_{\text{total}} \times \Gamma(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))/\Gamma(\psi(2S) \rightarrow J/\psi(1S)\pi^+\pi^-)}{\Gamma_{73}/\Gamma \times \Gamma_{181}^{\psi(2S)}/\Gamma_{12}^{\psi(2S)}}$$

| VALUE (units 10 <sup>-5</sup> )               | EVTS                                 | DOCUMENT ID      | TECN    | COMMENT                                           |
|-----------------------------------------------|--------------------------------------|------------------|---------|---------------------------------------------------|
| <b>10.1±0.4 OUR FIT</b>                       |                                      |                  |         |                                                   |
| <b>13.0<sup>+3.6</sup><sub>-3.5</sub>±2.5</b> | 15.2 <sup>+4.2</sup> <sub>-4.0</sub> | <sup>1</sup> BAI | 03E BES | $\psi(2S) \rightarrow \gamma\Lambda\bar{\Lambda}$ |

NODE=M056B21  
NODE=M056B21

<sup>1</sup> BAI 03E reports  $[B(\chi_{c0} \rightarrow \Lambda \bar{\Lambda}) B(\psi(2S) \rightarrow \gamma \chi_{c0}) / B(\psi(2S) \rightarrow J/\psi \pi^+ \pi^-)] \times [B^2(\Lambda \rightarrow \pi^- p) / B(J/\psi \rightarrow p \bar{p})] = (2.45^{+0.68}_{-0.65} \pm 0.46)\%$ . We calculate from this measurement the presented value using  $B(\Lambda \rightarrow \pi^- p) = (63.9 \pm 0.5)\%$  and  $B(J/\psi \rightarrow p \bar{p}) = (2.17 \pm 0.07) \times 10^{-3}$ .

NODE=M056B21;LINKAGE=BA

$$\Gamma(\chi_{c0}(1P) \rightarrow \Lambda \bar{\Lambda} \eta) / \Gamma_{\text{total}} \times \Gamma(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) / \Gamma_{\text{total}} \\ \Gamma_{78} / \Gamma \times \Gamma_{181}^{\psi(2S)} / \Gamma^{\psi(2S)}$$

| VALUE (units $10^{-5}$ )  | EVTS | DOCUMENT ID | TECN      | COMMENT                                                           |
|---------------------------|------|-------------|-----------|-------------------------------------------------------------------|
| <b>2.26 ± 0.30 ± 0.20</b> | 67   | ABLIKIM     | 22A0 BES3 | $\psi(2S) \rightarrow \gamma p \pi^- \bar{p} \pi^+ \gamma \gamma$ |

NODE=M056P03  
NODE=M056P03

$$\Gamma(\chi_{c0}(1P) \rightarrow \Lambda \bar{\Lambda} \omega) / \Gamma_{\text{total}} \times \Gamma(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) / \Gamma_{\text{total}} \\ \Gamma_{79} / \Gamma \times \Gamma_{181}^{\psi(2S)} / \Gamma^{\psi(2S)}$$

| VALUE (units $10^{-6}$ ) | EVTS     | DOCUMENT ID          | TECN      | COMMENT                                                     |
|--------------------------|----------|----------------------|-----------|-------------------------------------------------------------|
| <b>23.2 ± 2.2 ± 2.4</b>  | 316 ± 30 | <sup>1</sup> ABLIKIM | 24BE BES3 | $e^+ e^- \rightarrow \psi(2S) \rightarrow \gamma \chi_{c0}$ |

NODE=M056P07  
NODE=M056P07

<sup>1</sup> Calculated by us. The authors report  $B(\chi_{c0} \rightarrow \Lambda \bar{\Lambda} \omega)$  obtained from a product using PDG 22 value of  $B(\psi(2S) \rightarrow \gamma \chi_{c0})$ .

NODE=M056P07;LINKAGE=A

$$\Gamma(\chi_{c0}(1P) \rightarrow \Lambda \bar{\Lambda} \phi) / \Gamma_{\text{total}} \times \Gamma(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) / \Gamma_{\text{total}} \\ \Gamma_{80} / \Gamma \times \Gamma_{181}^{\psi(2S)} / \Gamma^{\psi(2S)}$$

| VALUE (units $10^{-6}$ )  | EVTS | DOCUMENT ID | TECN      | COMMENT                                 |
|---------------------------|------|-------------|-----------|-----------------------------------------|
| <b>2.92 ± 1.22 ± 0.19</b> | 7.2  | ABLIKIM     | 24AC BES3 | $\psi(2S) \rightarrow \gamma \chi_{c0}$ |

NODE=M056P05  
NODE=M056P05

$$\Gamma(\chi_{c0}(1P) \rightarrow \Sigma^+ \bar{p} K_S^0 + \text{c.c.}) / \Gamma_{\text{total}} \times \Gamma(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) / \Gamma_{\text{total}} \\ \Gamma_{88} / \Gamma \times \Gamma_{181}^{\psi(2S)} / \Gamma^{\psi(2S)}$$

| VALUE (units $10^{-5}$ )  | EVTS | DOCUMENT ID          | TECN      | COMMENT                                                            |
|---------------------------|------|----------------------|-----------|--------------------------------------------------------------------|
| <b>3.45 ± 0.17 ± 0.19</b> | 493  | <sup>1</sup> ABLIKIM | 19BB BES3 | $\psi(2S) \rightarrow \gamma \Sigma^+ \bar{p} K_S^0 + \text{c.c.}$ |

NODE=M056B24  
NODE=M056B24

<sup>1</sup> Calculated by us. ABLIKIM 19BB reports  $B(\chi_c^0 \rightarrow \Sigma^+ \bar{p} K_S^0 + \text{c.c.}) = (3.52 \pm 0.19 \pm 0.21) \times 10^{-4}$  using  $B(\psi(2S) \rightarrow \gamma \chi_c^0) = (9.79 \pm 0.20)\%$  and other branching fractions from PDG 18.

NODE=M056B24;LINKAGE=A

$$\Gamma(\chi_{c0}(1P) \rightarrow \Sigma^0 \bar{p} K^+ + \text{c.c.}) / \Gamma_{\text{total}} \times \Gamma(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) / \Gamma_{\text{total}} \\ \Gamma_{89} / \Gamma \times \Gamma_{181}^{\psi(2S)} / \Gamma^{\psi(2S)}$$

| VALUE (units $10^{-5}$ )  | EVTS | DOCUMENT ID          | TECN      | COMMENT                                                          |
|---------------------------|------|----------------------|-----------|------------------------------------------------------------------|
| <b>2.97 ± 0.12 ± 0.14</b> | 871  | <sup>1</sup> ABLIKIM | 20AE BES3 | $\psi(2S) \rightarrow \gamma \Sigma^0 \bar{p} K^+ + \text{c.c.}$ |

NODE=M056P01  
NODE=M056P01

<sup>1</sup> Calculated by us. ABLIKIM 20AE reports  $B(\chi_c^0 \rightarrow \Sigma^0 \bar{p} K^+ + \text{c.c.}) = (3.03 \pm 0.12 \pm 0.15) \times 10^{-4}$  using  $B(\psi(2S) \rightarrow \gamma \chi_c^0) = (9.79 \pm 0.20)\%$  and other branching fractions from PDG 20.

NODE=M056P01;LINKAGE=A

$$\Gamma(\chi_{c0}(1P) \rightarrow \gamma J/\psi(1S)) / \Gamma_{\text{total}} \times \Gamma(\psi(2S) \rightarrow \gamma \chi_{c0}(1P)) / \Gamma_{\text{total}} \\ \Gamma_{100} / \Gamma \times \Gamma_{181}^{\psi(2S)} / \Gamma^{\psi(2S)}$$

| VALUE (units $10^{-2}$ )         | EVTS                                | DOCUMENT ID | TECN | COMMENT |
|----------------------------------|-------------------------------------|-------------|------|---------|
| <b>0.137 ± 0.009 OUR FIT</b>     | Error includes scale factor of 1.7. |             |      |         |
| <b>0.147 ± 0.029 OUR AVERAGE</b> | Error includes scale factor of 4.6. |             |      |         |

NODE=M056B2  
NODE=M056B2

|                       |      |                        |          |                                             |
|-----------------------|------|------------------------|----------|---------------------------------------------|
| 0.158 ± 0.003 ± 0.006 | 4.8k | <sup>1</sup> ABLIKIM   | 17N BES3 | $\psi(2S) \rightarrow \gamma \gamma J/\psi$ |
| 0.024 ± 0.015 ± 0.205 | 12k  | ABLIKIM                | 17U BES3 | $e^+ e^- \rightarrow \gamma X$              |
| 0.069 ± 0.018         |      | <sup>2</sup> OREGIA    | 82 CBAL  | $\psi(2S) \rightarrow \gamma \chi_{c0}$     |
| 0.4 ± 0.3             |      | <sup>3</sup> BRANDELIK | 79B DASP | $\psi(2S) \rightarrow \gamma \chi_{c0}$     |
| 0.16 ± 0.11           |      | <sup>3</sup> BARTEL    | 78B CNTR | $\psi(2S) \rightarrow \gamma \chi_{c0}$     |
| 3.3 ± 1.7             |      | <sup>4</sup> BIDDICK   | 77 CNTR  | $e^+ e^- \rightarrow \gamma X$              |

• • • We do not use the following data for averages, fits, limits, etc. • • •

|                       |      |                      |          |                                         |
|-----------------------|------|----------------------|----------|-----------------------------------------|
| 0.151 ± 0.003 ± 0.010 | 4.3k | <sup>5</sup> ABLIKIM | 12O BES3 | $\psi(2S) \rightarrow \gamma \chi_{c0}$ |
| 0.125 ± 0.007 ± 0.013 | 560  | <sup>6</sup> MENDEZ  | 08 CLEO  | $\psi(2S) \rightarrow \gamma \chi_{c0}$ |
| 0.18 ± 0.01 ± 0.02    | 172  | <sup>7</sup> ADAM    | 05A CLEO | Repl. by MENDEZ 08                      |

NODE=M056B2;LINKAGE=A

<sup>1</sup> Uses  $B(J/\psi \rightarrow e^+ e^-) = (5.971 \pm 0.032)\%$  and  $B(J/\psi \rightarrow \mu^+ \mu^-) = (5.961 \pm 0.033)\%$ .

<sup>2</sup> Recalculated by us using  $B(J/\psi(1S) \rightarrow \ell^+ \ell^-) = 0.1181 \pm 0.0020$ .

<sup>3</sup> Recalculated by us using  $B(J/\psi(1S) \rightarrow \mu^+ \mu^-) = 0.0588 \pm 0.0010$ .

<sup>4</sup> Assumes isotropic gamma distribution.

<sup>5</sup> Superseded by ABLIKIM 17N.

<sup>6</sup> Not independent from other measurements of MENDEZ 08.

<sup>7</sup> Not independent from other values reported by ADAM 05A.

NODE=M056B;LINKAGE=3Q  
NODE=M056B;LINKAGE=2Q  
NODE=M056B;LINKAGE=EA  
NODE=M056B2;LINKAGE=B  
NODE=M056B2;LINKAGE=ME  
NODE=M056B2;LINKAGE=AD

$$\frac{\Gamma(\chi_{c0}(1P) \rightarrow \gamma J/\psi(1S))}{\Gamma_{\text{total}}} \times \frac{\Gamma(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))}{\Gamma(\psi(2S) \rightarrow J/\psi(1S) \pi^+ \pi^-)} \times \frac{\Gamma_{100}}{\Gamma} \times \frac{\Gamma_{181}^{\psi(2S)}}{\Gamma_{12}^{\psi(2S)}}$$

| VALUE (units $10^{-2}$ )   | EVTS                                | DOCUMENT ID | TECN    | COMMENT                                 |
|----------------------------|-------------------------------------|-------------|---------|-----------------------------------------|
| <b>0.396±0.025 OUR FIT</b> | Error includes scale factor of 1.7. |             |         |                                         |
| <b>0.358±0.020±0.037</b>   | 560                                 | MENDEZ      | 08 CLEO | $\psi(2S) \rightarrow \gamma \chi_{c0}$ |

• • • We do not use the following data for averages, fits, limits, etc. • • •

0.55 ±0.04 ±0.06 172 <sup>1</sup> ADAM 05A CLEO Repl. by MENDEZ 08

<sup>1</sup> Not independent from other values reported by ADAM 05A.

NODE=M056B8  
NODE=M056B8

NODE=M056B;LINKAGE=AD

$$\frac{\Gamma(\chi_{c0}(1P) \rightarrow \gamma\gamma)}{\Gamma_{\text{total}}} \times \frac{\Gamma(\psi(2S) \rightarrow \gamma \chi_{c0}(1P))}{\Gamma_{\text{total}}} \times \frac{\Gamma_{104}}{\Gamma} \times \frac{\Gamma_{181}^{\psi(2S)}}{\Gamma_{12}^{\psi(2S)}}$$

| VALUE (units $10^{-5}$ )     | EVTS                                | DOCUMENT ID | TECN | COMMENT |
|------------------------------|-------------------------------------|-------------|------|---------|
| <b>2.00±0.09 OUR FIT</b>     | Error includes scale factor of 1.1. |             |      |         |
| <b>1.95±0.09 OUR AVERAGE</b> |                                     |             |      |         |

1.93±0.08±0.05 3.5k ABLIKIM 17AE BES3  $\psi(2S) \rightarrow \gamma \chi_{c0} \rightarrow 3\gamma$   
 2.17±0.32±0.10 0.2k ECKLUND 08A CLEO  $\psi(2S) \rightarrow \gamma \chi_{c0} \rightarrow 3\gamma$   
 3.7 ±1.8 ±1.0 LEE 85 CBAL  $\psi(2S) \rightarrow \gamma \chi_{c0}$

• • • We do not use the following data for averages, fits, limits, etc. • • •

2.17±0.17±0.12 0.8k <sup>1</sup> ABLIKIM 12A BES3  $\psi(2S) \rightarrow \gamma \chi_{c0} \rightarrow 3\gamma$

<sup>1</sup> Superseded by ABLIKIM 17AE.

NODE=M056B3  
NODE=M056B3

NODE=M056B3;LINKAGE=A

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| ABLIKIM       | 24BE | PR D110 032022   | M. Ablikim <i>et al.</i>         | (BESIII Collab.) | REFID=62904 |
| ABLIKIM       | 24BT | PR D110 072009   | M. Ablikim <i>et al.</i>         | (BESIII Collab.) | REFID=63025 |
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| ABLIKIM       | 24P  | PR D109 072016   | M. Ablikim <i>et al.</i>         | (BESIII Collab.) | REFID=62667 |
| ABLIKIM       | 23N  | JHEP 2305 069    | M. Ablikim <i>et al.</i>         | (BESIII Collab.) | REFID=62056 |
| ABLIKIM       | 23T  | PR D107 092004   | M. Ablikim <i>et al.</i>         | (BESIII Collab.) | REFID=62064 |
| ABLIKIM       | 22AO | PR D106 072004   | M. Ablikim <i>et al.</i>         | (BESIII Collab.) | REFID=61887 |
| ABLIKIM       | 22O  | JHEP 2206 074    | M. Ablikim <i>et al.</i>         | (BESIII Collab.) | REFID=61652 |
| ABLIKIM       | 22Q  | PR D106 032014   | M. Ablikim <i>et al.</i>         | (BESIII Collab.) | REFID=61663 |
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| ABLIKIM       | 18V  | PR D97 052011    | M. Ablikim <i>et al.</i>         | (BESIII Collab.) | REFID=58990 |
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| ABLIKIM       | 13B  | PR D87 012002    | M. Ablikim <i>et al.</i>         | (BESIII Collab.) | REFID=54877 |
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| ABLIKIM       | 13V  | PR D88 112001    | M. Ablikim <i>et al.</i>         | (BESIII Collab.) | REFID=55583 |
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| DEL-AMO-SA... | 11M  | PR D84 012004    | P. del Amo Sanchez <i>et al.</i> | (BABAR Collab.)  | REFID=16751 |
| ABLIKIM       | 10A  | PR D81 052005    | M. Ablikim <i>et al.</i>         | (BESIII Collab.) | REFID=53347 |
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| UEHARA        | 10A  | PR D82 114031    | S. Uehara <i>et al.</i>          | (BELLE Collab.)  | REFID=53641 |
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| BENNETT       | 08A  | PRL 101 151801   | J.V. Bennett <i>et al.</i>       | (CLEO Collab.)   | REFID=52575 |
| ECKLUND       | 08A  | PR D78 091501    | K.M. Ecklund <i>et al.</i>       | (CLEO Collab.)   | REFID=52583 |

NODE=M056

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|------------|-----|---------------|-------------------------------|------------------------|-------------|
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| MENDEZ     | 08  | PR D78 011102 | H. Mendez <i>et al.</i>       | (CLEO Collab.)         | REFID=52684 |
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| ABE        | 07  | PRL 98 082001 | K. Abe <i>et al.</i>          | (BELLE Collab.)        | REFID=51627 |
| ADAMS      | 07  | PR D75 071101 | G.S. Adams <i>et al.</i>      | (CLEO Collab.)         | REFID=51651 |
| ATHAR      | 07  | PR D75 032002 | S.B. Athar <i>et al.</i>      | (CLEO Collab.)         | REFID=51618 |
| CHEN       | 07B | PL B651 15    | W.T. Chen <i>et al.</i>       | (BELLE Collab.)        | REFID=51710 |
| ABLIKIM    | 06D | PR D73 052006 | M. Ablikim <i>et al.</i>      | (BES Collab.)          | REFID=51049 |
| ABLIKIM    | 06I | PR D74 012004 | M. Ablikim <i>et al.</i>      | (BES Collab.)          | REFID=51126 |
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| ABLIKIM    | 05N | PL B630 7     | M. Ablikim <i>et al.</i>      | (BES Collab.)          | REFID=50847 |
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| ADAM       | 05A | PRL 94 232002 | N.E. Adam <i>et al.</i>       | (CLEO Collab.)         | REFID=50763 |
| ANDREOTTI  | 05A | NP B717 34    | M. Andreotti <i>et al.</i>    | (FNAL E835 Collab.)    | REFID=50769 |
| ANDREOTTI  | 05C | PR D72 112002 | M. Andreotti <i>et al.</i>    | (FNAL E835 Collab.)    | REFID=50991 |
| NAKAZAWA   | 05  | PL B615 39    | H. Nakazawa <i>et al.</i>     | (BELLE Collab.)        | REFID=50807 |
| ABE        | 04G | PR D70 071102 | K. Abe <i>et al.</i>          | (BELLE Collab.)        | REFID=50182 |
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| ANDREOTTI  | 04  | PL B584 16    | M. Andreotti <i>et al.</i>    | (E835 Collab.)         | REFID=49744 |
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| BAI        | 04F | PR D69 092001 | J.Z. Bai <i>et al.</i>        | (BES Collab.)          | REFID=49752 |
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| AULCHENKO  | 03  | PL B573 63    | V.M. Aulchenko <i>et al.</i>  | (KEDR Collab.)         | REFID=49579 |
| BAI        | 03C | PR D67 032004 | J.Z. Bai <i>et al.</i>        | (BES Collab.)          | REFID=49190 |
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| ABE,K      | 02  | PRL 89 142001 | K. Abe <i>et al.</i>          | (BELLE Collab.)        | REFID=49188 |
| BAGNASCO   | 02  | PL B533 237   | S. Bagnasco <i>et al.</i>     | (FNAL E835 Collab.)    | REFID=48833 |
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| GAISER     | 86  | PR D34 711    | J. Gaiser <i>et al.</i>       | (Crystal Ball Collab.) | REFID=22012 |
| LEE        | 85  | SLAC 282      | R.A. Lee                      | (SLAC)                 | REFID=40589 |
| OREGLIA    | 82  | PR D25 2259   | M.J. Oreglia <i>et al.</i>    | (SLAC, CIT, HARV+)     | REFID=22120 |
| BRANDELIK  | 79B | NP B160 426   | R. Brandelik <i>et al.</i>    | (DASP Collab.)         | REFID=22115 |
| BARTEL     | 78B | PL 79B 492    | W. Bartel <i>et al.</i>       | (DESY, HEIDP)          | REFID=22111 |
| TANENBAUM  | 78  | PR D17 1731   | W.M. Tanenbaum <i>et al.</i>  | (SLAC, LBL)            | REFID=22112 |
| Also       |     | Private Comm. | G. Trilling                   | (LBL, UCB)             | REFID=22113 |
| BIDDICK    | 77  | PRL 38 1324   | C.J. Biddick <i>et al.</i>    | (UCSD, UMD, PAVI+)     | REFID=22059 |

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