$\pi_2(1670)$ DECAY MODES

	Mode	Fraction (Γ_i/Γ)
Γ_1	$f_2(1270)\pi$	(56.2 ± 3.2) %
Γ_2	$\pi^\pm\pi^+\pi^-$	$(53\ \pm4\ )$ %
Γ_3	$\rho\pi$	$(31\ \pm4\ )$ %
Γ_4	$f_0(1300)\pi$	$(\ 8.7\pm3.4)$ %
Γ_5	$K\overline{K}^*(892)+$ c.c.	$(\ 4.2\pm1.4)$ %
Γ_6	$\gamma\gamma$	$(\ 5.6\pm1.1)\times10^{-6}$
Γ_7	$\eta\pi$	<5 %
Γ_8	$\pi^\pm 2\pi^+ 2\pi^-$	<5 %

CONSTRAINED FIT INFORMATION

An overall fit to 4 branching ratios uses 6 measurements and one constraint to determine 4 parameters. The overall fit has a $\chi^2 =$ 1.9 for 3 degrees of freedom.

The following *off-diagonal* array elements are the correlation coefficients $\left\langle\delta x_i\delta x_j\right\rangle/(\delta x_i\cdot\delta x_j)$, in percent, from the fit to the branching fractions, $x_i \equiv \Gamma_i/\Gamma_{\rm total}$. The fit constrains the x_i whose labels appear in this array to sum to one.

x_3	−53		
x_4	−29	−59	
x_5	−8	−21	−9
	x_1	x_3	x_4

$\pi_2(1670)$ PARTIAL WIDTHS

$\Gamma(\gamma\gamma)$ **Γ_6**

VALUE (keV)	*DOCUMENT ID*		*TECN*	*CHG*	*COMMENT*
1.35±0.26 OUR AVERAGE					
1.41±0.23±0.28	ANTREASYAN	90	CBAL	0	$e^+e^-\rightarrow e^+e^-\pi^0\pi^0\pi^0$
1.3 ±0.3 ±0.2	[7] BEHREND	90C	CELL	0	$e^+e^-\rightarrow e^+e^-\pi^+\pi^-\pi^0$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.8 ±0.3 ±0.12	[8] BEHREND	90C	CELL	0	$e^+e^-\rightarrow e^+e^-\pi^+\pi^-\pi^0$

[7] Incoherent Ansatz.
[8] Constructive interference between $f_2(1270)$,$\rho\pi$ and background.

$\pi_2(1670)$ BRANCHING RATIOS

$\Gamma(\rho\pi)/\Gamma(\pi^\pm\pi^+\pi^-)$ **$\frac{1}{2}\Gamma_3/\Gamma_2 = \frac{1}{2}\Gamma_3/(0.567\Gamma_1+\frac{1}{2}\Gamma_3+0.624\Gamma_4)$**

VALUE	*DOCUMENT ID*		*TECN*	*CHG*	*COMMENT*
0.29±0.04 OUR FIT					
0.29±0.05	[9] DAUM	81B	SPEC		63,94 π^-p
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.3	BARTSCH	68	HBC	+	8 $\pi^+p\rightarrow 3\pi p$
<0.4	FERBEL	68	RVUE	±	

[9] From a two-resonance fit to four 2^-0^+ waves.

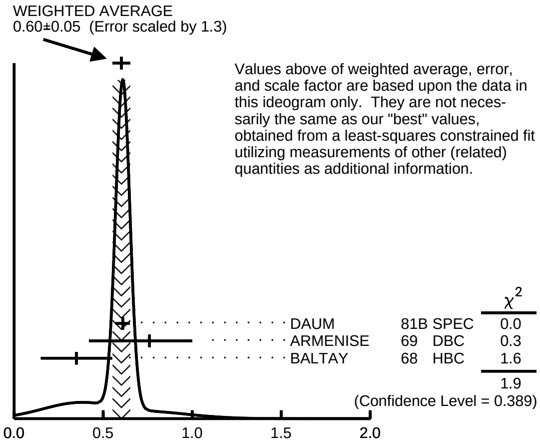
$\Gamma(f_2(1270)\pi)/\Gamma(\pi^\pm\pi^+\pi^-)$

$0.567\Gamma_1/\Gamma_2 = 0.567\Gamma_1/(0.567\Gamma_1+\frac{1}{2}\Gamma_3+0.624\Gamma_4)$

(With $f_2(1270)\rightarrow\pi^+\pi^-$.)

VALUE	*DOCUMENT ID*		*TECN*	*CHG*	*COMMENT*
0.604±0.035 OUR FIT					
0.60 ±0.05 OUR AVERAGE	Error includes scale factor of 1.3. See the ideogram below.				
0.61 ±0.04	[10] DAUM	81B	SPEC		63,94 π^-p
$0.76\ ^{+0.24}_{-0.34}$	ARMENISE	69	DBC	+	5.1 $\pi^+d\rightarrow d3\pi$
0.35 ±0.20	BALTAY	68	HBC	+	7–8.5 π^+p
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.59	BARTSCH	68	HBC	+	8 $\pi^+p\rightarrow 3\pi p$

[10] From a two-resonance fit to four 2^-0^+ waves.



$\Gamma(f_2(1270)\pi)/\Gamma(\pi^\pm\pi^+\pi^-)$

$\Gamma(\eta\pi)/\Gamma(\pi^\pm\pi^+\pi^-)$ **$\Gamma_7/\Gamma_2 = \Gamma_7/(0.567\Gamma_1+\frac{1}{2}\Gamma_3+0.624\Gamma_4)$**

(All η decays.)

VALUE	*DOCUMENT ID*		*TECN*	*CHG*	*COMMENT*
<0.09	BALTAY	68	HBC	+	7–8.5 π^+p
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.10	CRENNELL	70	HBC	−	6 $\pi^-p\rightarrow f_2\pi^-N$

$\Gamma(\pi^\pm 2\pi^+ 2\pi^-)/\Gamma(\pi^\pm\pi^+\pi^-)$ **$\Gamma_8/\Gamma_2 = \Gamma_8/(0.567\Gamma_1+\frac{1}{2}\Gamma_3+0.624\Gamma_4)$**

VALUE	*DOCUMENT ID*		*TECN*	*CHG*	*COMMENT*
<0.10	CRENNELL	70	HBC	−	6 $\pi^-p\rightarrow f_2\pi^-N$
<0.1	BALTAY	68	HBC	+	7,8.5 π^+p

$\Gamma(f_0(1300)\pi)/\Gamma(\pi^\pm\pi^+\pi^-)$

$0.624\Gamma_4/\Gamma_2 = 0.624\Gamma_4/(0.567\Gamma_1+\frac{1}{2}\Gamma_3+0.624\Gamma_4)$

(With $f_0(1300)\rightarrow\pi^+\pi^-$.)

VALUE	*DOCUMENT ID*		*TECN*	*COMMENT*
0.10±0.04 OUR FIT				
0.10±0.05	[11] DAUM	81B	SPEC	63,94 π^-p

[11] From a two-resonance fit to four 2^-0^+ waves.

$\Gamma(K\overline{K}^*(892)+\text{c.c.})/\Gamma(f_2(1270)\pi)$ **Γ_5/Γ_1**

VALUE	*DOCUMENT ID*		*TECN*	*CHG*	*COMMENT*
0.075±0.025 OUR FIT					
0.075±0.025	[12] ARMSTRONG	82B	OMEG	−	16 $\pi^-p\rightarrow K^+K^-\pi^-p$

[12] From a partial-wave analysis of $K^+K^-\pi^-$ system.

D-wave/S-wave RATIO FOR $\pi_2(1670)\rightarrow f_2(1270)\pi$

VALUE	*DOCUMENT ID*		*TECN*	*COMMENT*
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.22±0.10	[13] DAUM	81B	SPEC	63,94 π^-p

[13] From a two-resonance fit to four 2^-0^+ waves.

$\pi_2(1670)$ REFERENCES

ANTREASYAN 90 ZPHY C48 561 +Bartels, Besset+ (Crystal Ball Collab.)
BEHREND 90C ZPHY C46 583 +Criegee+ (CELLO Collab.)
ANTIPOV 87 EPL 4 403 +Batarin+ (SERP, JINR, INRM, TBIL, BGNA, MILA)
ARMSTRONG 82B NP B202 1 +Baccari (AACH3, BARI, BONN, CERN, GLAS+)
DAUM 81B NP B182 269 +Hertzberger+ (AMST, CERN, CRAC, MPIM, OXF+)
EVANGELISTA 81 NP B178 197 + (BARI, BONN, CERN, DARE, LIVP+)
Also 81B NP B186 594 Evangelista
DAUM 80D PL 89B 285 +Hertzberger+ (AMST, CERN, CRAC, MPIM, OXF+) JP
BALTAY 77 PRL 39 591 +Cautis, Kalelkar (COLU) JP
KALELKAR 75 Nevis 207 Thesis (COLU)
ASCOLI 73 PR D7 669 (ILL, TNTO, GENO, HAMB, MILA, SACL) JP
CRENNELL 70 PRL 24 781 +Karshon, Lai, Scarr, Sims (BNL)
ARMENISE 69 LNC 2 501 +Ghidini, Forino, Cartacci+ (BARI, BGNA, FIRZ)
BALTAY 68 PRL 20 887 +Kung, Yeh, Ferbel+ (COLU, ROCH, RUTG, YALE) I
BARTSCH 68 NP B7 345 +Keppel, Kraus+ (AACH, BERL, CERN) JP
FERBEL 68 Phil. Conf. 335 (ROCH)

OTHER RELATED PAPERS

CHEN 83B PR D28 2304 +Fenker+ (ARIZ, FNAL, FLOR, NDAM, TUFTS+)
LEEDOM 83 PR D27 1426 +DeBonte, Gaidos, Key, Wong+ (PURD, TNTO)
BELLINI 82B NP B199 1 + (CERN, MILA, JINR, BGNA, HELS, PAVI, WARS+)
FOCACCI 66 PRL 17 890 +Kienzle, Levrat, Maglich, Martin (CERN)
LEVRAT 66 PL 22 714 +Tolstrup+ (CERN Missing Mass Spect. Collab.)
LUBATTI 66 Berkeley Thesis (LRL)
VETLITSKY 66 PL 21 579 +Guszavin, Kliger, Zolganov+ (ITEP)
FORINO 65B PL 19 68 +Gessaroli+ (BGNA, BARI, FIRZ, ORSAY, SACL)