Meson Full Listings

$D_s^\pm$

$\Gamma(\phi\pi^+)/\Gamma_{\text{total}}$ Γ_{15}/Γ

Nearly all the other modes are measured relative to this mode, which, however, is an uncertain anchor; see the footnotes to the values below, and also the note at the beginning of the list of decay modes, above.

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
0.035 ± 0.004 OUR FIT						
0.036 ± 0.004 OUR AVERAGE						
0.051 ± 0.004 ± 0.008			[14] BUTLER	94	CLEO	$e^+e^- \approx \Upsilon(4S)$
0.046 ± 0.015			[15] MUHEIM	94		
0.031 ± 0.009			[15] MUHEIM	94		
0.031 ± 0.009 ± 0.006			[14] FRABETTI	93G	E687	γ Be $\overline{E}_\gamma$ = 220 GeV
0.024 ± 0.010			[14] ALBRECHT	91	ARG	$e^+e^- \approx$ 10.4 GeV
$0.031 \pm 0.006 {}^{+0.011}_{-0.009}$			[14] ALEXANDER	90B	CLEO	e^+e^- 10.5–11 GeV
0.048 ± 0.017 ± 0.019			[16] ALVAREZ	90C	NA14	Photoproduction
0.033 ± 0.016 ± 0.010		9	[17] BRAUNSCH...	87	TASS	e^+e^- 35–44 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •						
< 0.048	90		MUHEIM	94		
< 0.041	90	0	[18] ADLER	90B	MRK3	e^+e^- 4.14 GeV
> 0.034	90		[14] ANJOS	90B	E691	γ Be, $\overline{E}_\gamma \approx$ 145 GeV
0.02 ± 0.01		405	[17] CHEN	89	CLEO	e^+e^- 10 GeV
0.033 ± 0.011		30	[17] DERRICK	85B	HRS	e^+e^- 29 GeV

[14] BUTLER 94, FRABETTI 93G, ALBRECHT 91, ALEXANDER 90B, and ANJOS 90B measure the ratio $\Gamma(D_s^+ \to \phi\ell^+\nu_\ell)/\Gamma(D_s^+ \to \phi\pi^+)$, where $\ell = e$ and/or μ, and then use a theoretical calculation of the ratio of widths $\Gamma(D_s^+ \to \phi\ell^+\nu_\ell)/\Gamma(D^+ \to \overline{K}^{*0}\ell^+\nu)$. Not everyone uses the same value for this ratio.

[15] The two MUHEIM 94 values here are model-dependent calculations based on distinct data sets. The first uses measurements of the $D_2^*(2460)^0$ and $D_{s1}(2536)^+$, the second uses B-decay factorization and $\Gamma(D_s^+ \to \mu^+\nu_\mu)/\Gamma(D_s^+ \to \phi\ell^+\nu_\ell)$. A third calculation using the semileptonic width of $D_s^+ \to \phi\ell^+\nu_\ell$ is not independent of other results listed here. Note also the upper limit, based on the sum of established D_s^+ branching ratios.

[16] ALVAREZ 90C relies on the Lund model to estimate the ratio of D_s^+ to D^+ cross sections.

[17] Values based on crude estimates of the $D_s^\pm$ production level. DERRICK 85B errors are statistical only.

[18] ADLER 90 uses a technique based on full reconstruction of $D_s^+ D_s^-$ pairs (double tags) to obtain a branching ratio limit without assumptions about $\sigma(D_s^\pm)$.

$\Gamma(K^+\overline{K}^*(892)^0)/\Gamma(\phi\pi^+)$ Γ_{16}/Γ_{15}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.95 ± 0.10 OUR FIT					
0.95 ± 0.10 OUR AVERAGE					
0.85 ± 0.34 ± 0.20	9	ALVAREZ	90C	NA14	Photoproduction
0.84 ± 0.30 ± 0.22		ADLER	89B	MRK3	e^+e^- 4.14 GeV
1.05 ± 0.17 ± 0.12		CHEN	89	CLEO	e^+e^- 10 GeV
0.87 ± 0.13 ± 0.05	117	ANJOS	88	E691	Photoproduction
1.44 ± 0.37	87	ALBRECHT	87F	ARG	e^+e^- 10 GeV

$\Gamma(K^+K^-\pi^+ \text{nonresonant})/\Gamma(\phi\pi^+)$ Γ_{17}/Γ_{15}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.25 ± 0.09 OUR FIT					
0.25 ± 0.07 ± 0.05	48	ANJOS	88	E691	Photoproduction

$\Gamma(K^*(892)^+\overline{K}^0)/\Gamma(\phi\pi^+)$ Γ_{19}/Γ_{15}

VALUE	DOCUMENT ID		TECN	COMMENT
1.20 ± 0.21 ± 0.13	CHEN	89	CLEO	e^+e^- 10 GeV

$\Gamma(\phi\pi^+\pi^0)/\Gamma(\phi\pi^+)$ Γ_{21}/Γ_{15}

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
2.4 ± 1.0 ± 0.5		11	ANJOS	89E	E691	Photoproduction
• • • We do not use the following data for averages, fits, limits, etc. • • •						
< 2.6	90		ALVAREZ	90C	NA14	Photoproduction

$\Gamma(\phi\rho^+)/\Gamma(\phi\pi^+)$ Γ_{22}/Γ_{15}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
$\mathbf{1.86 \pm 0.26 {}^{+0.29}_{-0.40}}$	253	AVERY	92	CLEO	$e^+e^- \simeq$ 10.5 GeV

$\Gamma(\phi\pi^+\pi^0 \text{3-body})/\Gamma(\phi\pi^+)$ Γ_{23}/Γ_{15}

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
< 0.71	90	DAOUDI	92	CLEO	$e^+e^- \approx$ 10.5 GeV

$\Gamma(K^+K^-\pi^+\pi^0 \text{non-}\phi)/\Gamma(\phi\pi^+)$ Γ_{24}/Γ_{15}

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
< 2.4	90	[19] ANJOS	89E	E691	Photoproduction

[19] Total minus ϕ component.

$\Gamma(K^+\overline{K}^0\pi^+\pi^-)/\Gamma(\phi\pi^+)$ Γ_{25}/Γ_{15}

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
< 0.77	90	ALBRECHT	92B	ARG	$e^+e^- \simeq$ 10.4 GeV

$\Gamma(K^0K^-\pi^+\pi^+)/\Gamma(\phi\pi^+)$ Γ_{26}/Γ_{15}

VALUE	DOCUMENT ID		TECN	COMMENT
1.2 ± 0.2 ± 0.2	ALBRECHT	92B	ARG	$e^+e^- \simeq$ 10.4 GeV

$\Gamma(K^*(892)^+\overline{K}^*(892)^0)/\Gamma(\phi\pi^+)$ Γ_{27}/Γ_{15}

VALUE	DOCUMENT ID		TECN	COMMENT
1.6 ± 0.4 ± 0.4	ALBRECHT	92B	ARG	$e^+e^- \simeq$ 10.4 GeV

$\Gamma(K^0K^-\pi^+\pi^+ \text{non-}K^{*+}\overline{K}^{*0})/\Gamma(\phi\pi^+)$ Γ_{28}/Γ_{15}

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
< 0.80	90	ALBRECHT	92B	ARG	$e^+e^- \simeq$ 10.4 GeV

$\Gamma(\phi\pi^+\pi^+\pi^-)/\Gamma(\phi\pi^+)$ Γ_{30}/Γ_{15}

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
0.51 ± 0.12 OUR AVERAGE						
0.58 ± 0.21 ± 0.10		21	FRABETTI	92	E687	γ Be
0.42 ± 0.13 ± 0.07		19	ANJOS	88	E691	Photoproduction
1.11 ± 0.37 ± 0.28		62	ALBRECHT	85D	ARG	e^+e^- 10 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •						
< 0.24	90		ALVAREZ	90C	NA14	Photoproduction

$\Gamma(K^+K^-\pi^+\pi^+\pi^- \text{non-}\phi)/\Gamma_{\text{total}}$ Γ_{31}/Γ

VALUE	DOCUMENT ID		TECN	COMMENT
$\mathbf{0.003 {}^{+0.003}_{-0.002}}$	BARLAG	92C	ACCM	π^- 230 GeV

$\Gamma(K^+K^-\pi^+\pi^+\pi^- \text{non-}\phi)/\Gamma(\phi\pi^+)$ Γ_{31}/Γ_{15}

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •						
< 0.32	90	10	ANJOS	88	E691	Photoproduction

Other hadronic modes

$\Gamma(\pi^+\pi^+\pi^-)/\Gamma(\phi\pi^+)$ Γ_{32}/Γ_{15}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.39 ± 0.08 OUR AVERAGE					
0.33 ± 0.10 ± 0.04	29	ADAMOVICH	93	WA82	π^- 340 GeV
0.44 ± 0.10 ± 0.04		ANJOS	89	E691	Photoproduction

$\Gamma(\rho^0\pi^+)/\Gamma(\phi\pi^+)$ Γ_{33}/Γ_{15}

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
< 0.08	90	ANJOS	89	E691	Photoproduction
• • • We do not use the following data for averages, fits, limits, etc. • • •					
< 0.22	90	ALBRECHT	87G	ARG	e^+e^- 10 GeV

$\Gamma(f_0(980)\pi^+)/\Gamma(\phi\pi^+)$ Γ_{34}/Γ_{15}

VALUE	DOCUMENT ID		TECN	COMMENT
0.28 ± 0.10 ± 0.03	ANJOS	89	E691	Photoproduction

$\Gamma(\pi^+\pi^+\pi^- \text{nonresonant})/\Gamma(\phi\pi^+)$ Γ_{35}/Γ_{15}

VALUE	DOCUMENT ID		TECN	COMMENT
0.29 ± 0.09 ± 0.03	ANJOS	89	E691	Photoproduction

$\Gamma(\pi^+\pi^+\pi^-\pi^0)/\Gamma(\phi\pi^+)$ Γ_{36}/Γ_{15}

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
< 3.3	90	ANJOS	89E	E691	Photoproduction

$\Gamma(\eta\pi^+)/\Gamma(\phi\pi^+)$ Γ_{37}/Γ_{15}

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
0.54 ± 0.09 ± 0.06		165	ALEXANDER	92	CLEO	$\eta \to \gamma\gamma$, $\pi^+\pi^-\pi^0$
• • • We do not use the following data for averages, fits, limits, etc. • • •						
< 1.5	90		ANJOS	89E	E691	Photoproduction

$\Gamma(\omega\pi^+)/\Gamma(\phi\pi^+)$ Γ_{38}/Γ_{15}

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
< 0.5	90	ANJOS	89E	E691	Photoproduction

$\Gamma(\pi^+\pi^+\pi^+\pi^-\pi^-)/\Gamma_{\text{total}}$ Γ_{39}/Γ

VALUE	DOCUMENT ID		TECN	COMMENT
$\mathbf{0.003 {}^{+0.004}_{-0.003}}$	BARLAG	92C	ACCM	π^- 230 GeV

$\Gamma(\pi^+\pi^+\pi^+\pi^-\pi^-)/\Gamma(\phi\pi^+)$ Γ_{39}/Γ_{15}

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
< 0.29	90	ANJOS	89	E691	Photoproduction

$\Gamma(\eta\rho^+)/\Gamma(\phi\pi^+)$ Γ_{41}/Γ_{15}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
$\mathbf{2.86 \pm 0.38 {}^{+0.36}_{-0.38}}$	217	AVERY	92	CLEO	$\eta \to \gamma\gamma$, $\pi^+\pi^-\pi^0$