Meson Full Listings

$f_2'(1525)$

$f_2'(1525)$ DECAY MODES

	Mode	Fraction (Γ_j/Γ)
Γ_1	$K\overline{K}$	$(71.2\ ^{+2.0}_{-2.5})\ \%$
Γ_2	$\eta\eta$	$(27.9\ ^{+2.5}_{-2.0})\ \%$
Γ_3	$\pi\pi$	$(\ 8.2\ \pm 1.6\ ) \times 10^{-3}$
Γ_4	$\gamma\gamma$	$(\ 1.23 \pm 0.22) \times 10^{-6}$
Γ_5	$K\overline{K}^*(892)+$ c.c.	
Γ_6	$\pi\pi\eta$	
Γ_7	$\pi K\overline{K}$	
Γ_8	$\pi^+\pi^+\pi^-\pi^-$	

CONSTRAINED FIT INFORMATION

An overall fit to the total width, 4 partial widths, a combination of partial widths obtained from integrated cross sections, and 2 branching ratios uses 13 measurements and one constraint to determine 5 parameters. The overall fit has a $\chi^2 = 10.0$ for 9 degrees of freedom.

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

x_2	−100			
x_3	−6	−2		
x_4	−29	29	0	
Γ	61	−61	2	−39
	x_1	x_2	x_3	x_4

	Mode	Rate (MeV)
Γ_1	$K\overline{K}$	$61\ \pm 5$
Γ_2	$\eta\eta$	$23.9\ ^{+2.2}_{-1.2}$
Γ_3	$\pi\pi$	0.70 ± 0.14
Γ_4	$\gamma\gamma$	$(\ 1.05 \pm 0.17) \times 10^{-4}$

$f_2'(1525)$ PARTIAL WIDTHS

$\Gamma(K\overline{K})$ Γ_1

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
61 ±5 OUR FIT				
63.0 $^{+6.0}_{-5.0}$	[12] LONGACRE	86	MPS	$22\ \pi^- p \rightarrow K^0_S K^0_S n$

$\Gamma(\pi\pi)$ Γ_3

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
0.70 ± 0.14 OUR FIT				
1.4 $^{+1.0}_{-0.5}$	[12] LONGACRE	86	MPS	$22\ \pi^- p \rightarrow K^0_S K^0_S n$

$\Gamma(\eta\eta)$ Γ_2

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
23.9 $^{+2.2}_{-1.2}$ OUR FIT				
24.0 $^{+3.0}_{-1.0}$	[12] LONGACRE	86	MPS	$22\ \pi^- p \rightarrow K^0_S K^0_S n$

$\Gamma(\gamma\gamma)$ Γ_4

VALUE (keV)	DOCUMENT ID		TECN	COMMENT
0.105 ± 0.017 OUR FIT				
0.107 $^{+0.029}_{-0.022}$ OUR AVERAGE				
$0.11\ ^{+0.03}_{-0.02}\ \pm 0.02$	BEHREND	89C	CELL	$e^+e^- \rightarrow e^+e^- K^0_S K^0_S$
$0.10\ ^{+0.04}_{-0.03}\ ^{+0.03}_{-0.02}$	BERGER	88	PLUT	$e^+e^- \rightarrow e^+e^- K^0_S K^0_S$

[12] From a partial-wave analysis of data using a K-matrix formalism with 5 poles.

$f_2'(1525)$ Γ(i)$\Gamma(\gamma\gamma)/\Gamma$(total)

$\Gamma(K\overline{K}) \times \Gamma(\gamma\gamma)/\Gamma_{\rm total}$ $\Gamma_1\Gamma_4/\Gamma$

VALUE (keV)	DOCUMENT ID		TECN	COMMENT
0.075 ±0.012 OUR FIT				
0.074 ±0.016 OUR AVERAGE				
$0.067 \pm 0.008 \pm 0.015$	[13] ALBRECHT	90G	ARG	$e^+e^- \rightarrow e^+e^- K^+K^-$
$0.12 \pm 0.07 \pm 0.04$	[13] AIHARA	86B	TPC	$e^+e^- \rightarrow e^+e^- K^+K^-$
$0.11 \pm 0.02 \pm 0.04$	[13] ALTHOFF	83	TASS	$e^+e^- \rightarrow e^+e^- K\overline{K}$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$0.0314 \pm 0.0050 \pm 0.0077$	[14] ALBRECHT	90G	ARG	$e^+e^- \rightarrow e^+e^- K^+K^-$

[13] Using an incoherent background.
[14] Using a coherent background.

$f_2'(1525)$ BRANCHING RATIOS

$\Gamma(\eta\eta)/\Gamma(K\overline{K})$ Γ_2/Γ_1

VALUE	DOCUMENT ID		TECN	COMMENT
$0.39^{+0.05}_{-0.04}$ OUR FIT				
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.11 ± 0.04	[15] PROKOSHKIN	91	GAM4	$300\ \pi^- p \rightarrow \pi^- p\eta\eta$
< 0.50	BARNES	67	HBC	4.6,5.0 $K^- p$

[15] Combining results of GAM4 with those of WA76 on $K\overline{K}$ central production and results of CBAL, MRK3 and DM2 on $J/\psi \rightarrow \gamma\eta\eta$.

$\Gamma(\pi\pi)/\Gamma_{\rm total}$ Γ_3/Γ

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
0.0082 ± 0.0016 OUR FIT					
0.0075 ± 0.0016 OUR AVERAGE					
0.007 ± 0.002		COSTA...	80	OMEG	$10\ \pi^- p \rightarrow K^+K^- n$
$0.027\ ^{+0.071}_{-0.013}$		[16] GORLICH	80	ASPK	17,18 $\pi^- p$
0.0075 ± 0.0025		[16,17] MARTIN	79	RVUE	
• • • We do not use the following data for averages, fits, limits, etc. • • •					
< 0.06	95	AGUILAR-...	81B	HBC	$4.2\ K^- p \rightarrow \Lambda K^+ K^-$
0.19 ± 0.03		CORDEN	79	OMEG	12–15 $\pi^- p \rightarrow \pi^+\pi^- n$
< 0.045	95	BARREIRO	77	HBC	$4.15\ K^- p \rightarrow \Lambda K^0_S K^0_S$
0.012 ± 0.004		[16] PAWLICKI	77	SPEC	$6\ \pi N \rightarrow K^+K^- N$
< 0.063	90	BRANDENB...	76C	ASPK	13 $K^- p \rightarrow K^+K^-(\Lambda,\Sigma)$
< 0.0086		[16] BEUSCH	75B	OSPK	$8.9\ \pi^- p \rightarrow K^0\overline{K}^0 n$

[16] Assuming that the $f_2'(1525)$ is produced by an one-pion exchange production mechanism.
[17] MARTIN 79 uses the PAWLICKI 77 data with different input value of the $f_2'(1525) \rightarrow K\overline{K}$ branching ratio.

$\Gamma(\pi\pi)/\Gamma(K\overline{K})$ Γ_3/Γ_1

VALUE	DOCUMENT ID		TECN	COMMENT
0.0115 ± 0.0022 OUR FIT				
0.075 ±0.035	AUGUSTIN	87	DM2	$J/\psi \rightarrow \gamma\pi^+\pi^-$

$\Gamma(\pi\pi\eta)/\Gamma(K\overline{K})$ Γ_6/Γ_1

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
< 0.41	95	AGUILAR-...	72B	HBC	3.9,4.6 $K^- p$
< 0.3	67	AMMAR	67	HBC	

$\left[\Gamma(K\overline{K}^*(892)+\text{c.c.}) + \Gamma(\pi K\overline{K})\right]/\Gamma(K\overline{K})$ $(\Gamma_5+\Gamma_7)/\Gamma_1$

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
< 0.35	95	AGUILAR-...	72B	HBC	3.9,4.6 $K^- p$
< 0.4	67	AMMAR	67	HBC	

$\Gamma(\pi^+\pi^+\pi^-\pi^-)/\Gamma(K\overline{K})$ Γ_8/Γ_1

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
< 0.32	95	AGUILAR-...	72B	HBC	3.9,4.6 $K^- p$

$\Gamma(\eta\eta)/\Gamma_{\rm total}$ Γ_2/Γ

VALUE	DOCUMENT ID		TECN	COMMENT
0.10 ±0.03	[18] PROKOSHKIN	91	GAM4	$300\ \pi^- p \rightarrow \pi^- p\eta\eta$

[18] Combining results of GAM4 with those of WA76 on $K\overline{K}$ central production and results of CBAL, MRK3 and DM2 on $J/\psi \rightarrow \gamma\eta\eta$.