$\rho(1570)$

$I^G(J^{PC}) = 1^+(1^{--})$

OMITTED FROM SUMMARY TABLE

May be an OZI-violating decay mode of $\rho(1700)$. See the review on "Spectroscopy of Light Meson Resonances."

$\rho(1570)$ MASS

VALUE (MeV)	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
1570±36±62	54	[1] AUBERT	08S	BABR	10.6 $e^+e^- \to \phi\pi^0\gamma$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
1614± 2		[2] ACHASOV	23A	SND	$e^+e^- \to \omega\pi^0$
1585±15		[3] ACHASOV	20C	SND	1.3–2.0 $e^+e^- \to K^+K^-\pi^0$
1480±40		[4] BITYUKOV	87	SPEC	32.5 $\pi^- p \to \phi\pi^0 n$

[1] From the fit with two resonances.
[2] From a vector dominance fit to the Born cross section between 1.05 and 2.0 GeV with $\rho(770)$, $\rho(1570)$, $\rho(1700)$, $\rho(2150)$. The fit also uses SND data from the VEPP-2M collider below 1.02 GeV and from LEES 17H and ABLIKIM 21A above 1.5 GeV.
[3] From a fit using a two resonance model in which the mass and width of the other resonance are fixed at the $\rho(1700)$ values from PDG 20.
[4] Systematic errors not estimated.

$\rho(1570)$ WIDTH

VALUE (MeV)	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
144±75±43	54	[1] AUBERT	08S	BABR	10.6 $e^+e^- \to \phi\pi^0\gamma$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
492± 4		[2] ACHASOV	23A	SND	$e^+e^- \to \omega\pi^0$
75±30		[3] ACHASOV	20C	SND	1.3–2.0 $e^+e^- \to K^+K^-\pi^0$
130±60		[4] BITYUKOV	87	SPEC	32.5 $\pi^- p \to \phi\pi^0 n$

[1] From the fit with two resonances.
[2] From a vector dominance fit to the Born cross section between 1.05 and 2.0 GeV with $\rho(770)$, $\rho(1570)$, $\rho(1700)$, $\rho(2150)$. The fit also uses SND data from the VEPP-2M collider below 1.02 GeV and from LEES 17H and ABLIKIM 21A above 1.5 GeV.
[3] From a fit using a two resonance model in which the mass and width of the other resonance are fixed at the $\rho(1700)$ values from PDG 20.
[4] Systematic errors not estimated.

$\rho(1570)$ DECAY MODES

	Mode	Fraction (Γ_i/Γ)
Γ_1	e^+e^-	seen
Γ_2	$\phi\pi$	not seen
Γ_3	$\omega\pi$	

$\rho(1570)$ $\Gamma(i)\Gamma(e^+e^-)/\Gamma(total)$

$\Gamma(\phi\pi) \times \Gamma(e^+e^-)/\Gamma_{total}$ $\Gamma_2\Gamma_1/\Gamma$

VALUE (eV)	*CL%*	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
3.5±0.9±0.3		54	[1] AUBERT	08S	BABR	10.6 $e^+e^- \to \phi\pi^0\gamma$

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

<70	90		[2] AULCHENKO	87B	ND	$e^+e^- \to K^0_S K^0_L \pi^0$

[1] From the fit with two resonances.
[2] Using mass and width of BITYUKOV 87.

$\rho(1570)$ BRANCHING RATIOS

$\Gamma(\phi\pi)/\Gamma_{total}$ Γ_2/Γ

VALUE	*DOCUMENT ID*		*TECN*	*COMMENT*
not seen	ABELE	97H	CBAR	$\overline{p}p \to K^0_L K^0_S \pi^0\pi^0$

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

<0.01	[1] DONNACHIE	91	RVUE		

[1] Using data from BISELLO 91B, DOLINSKY 86, and ALBRECHT 87L.

$\Gamma(\phi\pi)/\Gamma(\omega\pi)$ Γ_2/Γ_3

VALUE	*CL%*	*DOCUMENT ID*		*TECN*	*COMMENT*
• • • We do not use the following data for averages, fits, limits, etc. • • •					
>0.5	95	BITYUKOV	87	SPEC	32.5 $\pi^- p \to \phi\pi^0 n$

$\rho(1570)$ REFERENCES

ACHASOV	23A	PR D108 092012	M.N. Achasov *et al.*	(SND Collab.)
ABLIKIM	21A	PL B813 136059	M. Ablikim *et al.*	(BESIII Collab.)
ACHASOV	20C	EPJ C80 1139	M.N. Achasov *et al.*	(SND Collab.)
PDG	20	PTEP 2020 083C01	P.A. Zyla *et al.*	(PDG Collab.)
LEES	17H	PR D96 092009	J.P. Lees *et al.*	(BABAR Collab.)
AUBERT	08S	PR D77 092002	B. Aubert *et al.*	(BABAR Collab.)
ABELE	97H	PL B415 280	A. Abele *et al.*	(Crystal Barrel Collab.)
BISELLO	91B	NPBPS B21 111	D. Bisello	(DM2 Collab.)
DONNACHIE	91	ZPHY C51 689	A. Donnachie, A.B. Clegg	(MCHS, LANC)
ALBRECHT	87L	PL B185 223	H. Albrecht *et al.*	(ARGUS Collab.)
AULCHENKO	87B	JETPL 45 145	V.M. Aulchenko *et al.*	(NOVO)
		Translated from ZETFP 45 118.		
BITYUKOV	87	PL B188 383	S.I. Bityukov *et al.*	(SERP)
DOLINSKY	86	PL B174 453	S.I. Dolinsky *et al.*	(NOVO)