

$\rho(1570)$

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

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)	EPTS	DOCUMENT ID	TECN	COMMENT
1570±36±62	54	¹ AUBERT	08S BABR	10.6 $e^+e^- \rightarrow \phi\pi^0\gamma$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
1614± 2		² ACHASOV	23A SND	$e^+e^- \rightarrow \omega\pi^0$
1585±15		³ ACHASOV	20C SND	1.3–2.0 $e^+e^- \rightarrow K^+K^-\pi^0$
1480±40		⁴ BITYUKOV	87 SPEC	32.5 $\pi^-p \rightarrow \phi\pi^0n$
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)	EPTS	DOCUMENT ID	TECN	COMMENT
144±75±43	54	¹ AUBERT	08S BABR	10.6 $e^+e^- \rightarrow \phi\pi^0\gamma$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
492± 4		² ACHASOV	23A SND	$e^+e^- \rightarrow \omega\pi^0$
75±30		³ ACHASOV	20C SND	1.3–2.0 $e^+e^- \rightarrow K^+K^-\pi^0$
130±60		⁴ BITYUKOV	87 SPEC	32.5 $\pi^-p \rightarrow \phi\pi^0n$
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 $\omega\pi$	

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

$\Gamma(\phi\pi) \times \Gamma(e^+ e^-) / \Gamma_{\text{total}}$					$\Gamma_2 \Gamma_1 / \Gamma$	
VALUE (eV)	CL%	EPTS	DOCUMENT ID	TECN	COMMENT	
$3.5 \pm 0.9 \pm 0.3$		54	¹ AUBERT	08S	BABR	$10.6 \ e^+ e^- \rightarrow \phi \pi^0 \gamma$
• • • We do not use the following data for averages, fits, limits, etc. • • •						
<70	90		² AULCHENKO	87B	ND	$e^+ e^- \rightarrow K_S^0 K_L^0 \pi^0$
¹ From the fit with two resonances.						
² Using mass and width of BITYUKOV 87.						

$\rho(1570)$ BRANCHING RATIOS

$\Gamma(\phi\pi) / \Gamma_{\text{total}}$				Γ_2 / Γ	
VALUE		DOCUMENT ID	TECN	COMMENT	
not seen		ABELE	97H	CBAR	$\bar{p} p \rightarrow K_L^0 K_S^0 \pi^0 \pi^0$
• • • 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
<u>VALUE</u>	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●					
>0.5	95	BITYUKOV	87	SPEC	32.5 $\pi^- p \rightarrow \phi \pi^0 n$

$\rho(1570)$ REFERENCES

ACHASOV	23A	PR D108 092012	M.N. Achasov <i>et al.</i>	(SND Collab.)
ABLIKIM	21A	PL B813 136059	M. Ablikim <i>et al.</i>	(BESIII Collab.)
ACHASOV	20C	EPJ C80 1139	M.N. Achasov <i>et al.</i>	(SND Collab.)
PDG	20	PTEP 2020 083C01	P.A. Zyla <i>et al.</i>	(PDG Collab.)
LEES	17H	PR D96 092009	J.P. Lees <i>et al.</i>	(BABAR Collab.)
AUBERT	08S	PR D77 092002	B. Aubert <i>et al.</i>	(BABAR Collab.)
ABELE	97H	PL B415 280	A. Abele <i>et al.</i>	(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 <i>et al.</i>	(ARGUS Collab.)
AULCHENKO	87B	JETPL 45 145	V.M. Aulchenko <i>et al.</i>	(NOVO)
		Translated from ZETFP 45 118.		
BITYUKOV	87	PL B188 383	S.I. Bitjukov <i>et al.</i>	(SERP)
DOLINSKY	86	PL B174 453	S.I. Dolinsky <i>et al.</i>	(NOVO)