

# ρ(1570)

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

OMITTED FROM SUMMARY TABLE

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

### ρ(1570) MASS

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
<b>1570±36±62</b>	54	<sup>1</sup> AUBERT	08S BABR	10.6 e <sup>+</sup> e <sup>-</sup> → φπ <sup>0</sup> γ
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●				
1614± 2		<sup>2</sup> ACHASOV	23A SND	e <sup>+</sup> e <sup>-</sup> → ωπ <sup>0</sup>
1585±15		<sup>3</sup> ACHASOV	20C SND	1.3–2.0 e <sup>+</sup> e <sup>-</sup> → K <sup>+</sup> K <sup>-</sup> π <sup>0</sup>
1480±40		<sup>4</sup> BITYUKOV	87 SPEC	32.5 π <sup>-</sup> p → φπ <sup>0</sup> n

<sup>1</sup> From the fit with two resonances.

<sup>2</sup> From a vector dominance fit to the Born cross section between 1.05 and 2.0 GeV with ρ(770), ρ(1570), ρ(1700), ρ(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.

<sup>3</sup> From a fit using a two resonance model in which the mass and width of the other resonance are fixed at the ρ(1700) values from PDG 20.

<sup>4</sup> Systematic errors not estimated.

### ρ(1570) WIDTH

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
<b>144±75±43</b>	54	<sup>1</sup> AUBERT	08S BABR	10.6 e <sup>+</sup> e <sup>-</sup> → φπ <sup>0</sup> γ
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●				
492± 4		<sup>2</sup> ACHASOV	23A SND	e <sup>+</sup> e <sup>-</sup> → ωπ <sup>0</sup>
75±30		<sup>3</sup> ACHASOV	20C SND	1.3–2.0 e <sup>+</sup> e <sup>-</sup> → K <sup>+</sup> K <sup>-</sup> π <sup>0</sup>
130±60		<sup>4</sup> BITYUKOV	87 SPEC	32.5 π <sup>-</sup> p → φπ <sup>0</sup> n

<sup>1</sup> From the fit with two resonances.

<sup>2</sup> From a vector dominance fit to the Born cross section between 1.05 and 2.0 GeV with ρ(770), ρ(1570), ρ(1700), ρ(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.

<sup>3</sup> From a fit using a two resonance model in which the mass and width of the other resonance are fixed at the ρ(1700) values from PDG 20.

<sup>4</sup> Systematic errors not estimated.

### ρ(1570) DECAY MODES

Mode	Fraction (Γ <sub>i</sub> /Γ)
Γ <sub>1</sub> e <sup>+</sup> e <sup>-</sup>	seen
Γ <sub>2</sub> φπ	not seen
Γ <sub>3</sub> ωπ	

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

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

VALUE (eV)	CL%	EVTS	DOCUMENT ID	TECN	COMMENT
<b><math>3.5 \pm 0.9 \pm 0.3</math></b>		54	<sup>1</sup> AUBERT	08S BABR	$10.6 e^+e^- \rightarrow \phi\pi^0\gamma$
$<70$	90		<sup>2</sup> AULCHENKO	87B ND	$e^+e^- \rightarrow K_S^0 K_L^0 \pi^0$

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

<sup>1</sup> From the fit with two resonances.

<sup>2</sup> Using mass and width of BITYUKOV 87.

### $\rho(1570)$ BRANCHING RATIOS

$\Gamma(\phi\pi)/\Gamma_{\text{total}}$   $\Gamma_2/\Gamma$

VALUE	DOCUMENT ID	TECN	COMMENT
<b>not seen</b>	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. • • •

$<0.01$  <sup>1</sup> DONNACHIE 91 RVUE

<sup>1</sup> Using data from BISELLO 91B, DOLINSKY 86, and ALBRECHT 87L.

$\Gamma(\phi\pi)/\Gamma(\omega\pi)$   $\Gamma_2/\Gamma_3$

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
$>0.5$	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)
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)