

$\omega(1650)$
 was $\omega(1600)$

$$I^G(J^{PC}) = 0^-(1^{--})$$

$\omega(1650)$ MASS

| VALUE (MeV) | EVTS | DOCUMENT ID | TECN | CHG | COMMENT |
|---|------|-------------------------------------|------|--------|---|
| 1649 ± 24 OUR AVERAGE | | Error includes scale factor of 2.3. | | | |
| 1609 ± 20 | 315 | ¹ ANTONELLI | 92 | DM2 | 1.34–2.4e ⁺ e ⁻ → $\rho\pi$ |
| 1663 ± 12 | 435 | ² ANTONELLI | 92 | DM2 | 1.34–2.4e ⁺ e ⁻ → $\omega\pi\pi$ |
| ● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ● | | | | | |
| 1643 ± 14 | | ³ ACHASOV | 99E | RVUE | 0.75–1.80 $e^+e^- \rightarrow \pi^+\pi^-\pi^0$ |
| 1820 ⁺¹⁹⁰ ₋₁₅₀ | | ⁴ ACHASOV | 98H | RVUE | $e^+e^- \rightarrow \pi^+\pi^-\pi^0$ |
| 1840 ⁺¹⁰⁰ ₋₇₀ | | ⁵ ACHASOV | 98H | RVUE | $e^+e^- \rightarrow \omega\pi^+\pi^-$ |
| 1780 ⁺¹⁷⁰ ₋₃₀₀ | | ⁶ ACHASOV | 98H | RVUE | $e^+e^- \rightarrow K^+K^-$ |
| ~ 2100 | | ⁷ ACHASOV | 98H | RVUE | $e^+e^- \rightarrow K_S^0 K^\pm \pi^\mp$ |
| 1600 ± 30 | | ¹ CLEGG | 94 | RVUE | $e^+e^- \rightarrow \rho\pi$ |
| 1607 ± 10 | | ² CLEGG | 94 | RVUE | $e^+e^- \rightarrow \omega\pi\pi$ |
| 1635 ± 35 | | ⁸ CLEGG | 94 | RVUE | $e^+e^- \rightarrow \rho\pi$ |
| 1625 ± 21 | | ⁸ CLEGG | 94 | RVUE | $e^+e^- \rightarrow \omega\pi\pi$ |
| 1670 ± 20 | | ATKINSON | 83B | OMEG | 20–70 $\gamma p \rightarrow 3\pi X$ |
| 1657 ± 13 | | CORDIER | 81 | DM1 | $e^+e^- \rightarrow \omega 2\pi$ |
| 1679 ± 34 | 21 | ESPOSITO | 80 | FRAM | $e^+e^- \rightarrow 3\pi$ |
| 1652 ± 17 | | COSME | 79 | OSPK 0 | $e^+e^- \rightarrow 3\pi$ |

¹ From a two Breit-Wigner fit.

² From a single Breit-Wigner plus background fit.

³ Using the data of DOLINSKY 91, ANTONELLI 92, AKHMETSCHIN 98, and ACHASOV 99E. From a fit to two Breit-Wigner functions interfering between them and with the ω, ϕ tails with fixed (+, -, +) phases.

⁴ Using data from BARKOV 87, DOLINSKY 91, and ANTONELLI 92.

⁵ Using the data from ANTONELLI 92.

⁶ Using the data from IVANOV 81 and BISELLO 88B.

⁷ Using the data from BISELLO 91C.

⁸ From a single Breit-Wigner fit.

$\omega(1650)$ WIDTH

| VALUE (MeV) | EVTS | DOCUMENT ID | TECN | CHG | COMMENT |
|-----------------------------|------|-------------------------------------|------|-----|---|
| 220 ± 35 OUR AVERAGE | | Error includes scale factor of 1.6. | | | |
| 159 ± 43 | 315 | ⁹ ANTONELLI | 92 | DM2 | 1.34–2.4e ⁺ e ⁻ → $\rho\pi$ |
| 240 ± 25 | 435 | ¹⁰ ANTONELLI | 92 | DM2 | 1.34–2.4e ⁺ e ⁻ → $\omega\pi\pi$ |

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

| | | | | |
|----------|----|-----------------------|-----------|---|
| 272 ± 29 | | ¹¹ ACHASOV | 99E RVUE | 0.75–1.80 $e^+e^- \rightarrow \pi^+\pi^-\pi^0$ |
| 140 ± 50 | | ⁹ CLEGG | 94 RVUE | $e^+e^- \rightarrow \rho\pi$ |
| 86 ± 20 | | ¹⁰ CLEGG | 94 RVUE | $e^+e^- \rightarrow \omega\pi\pi$ |
| 350 ± 80 | | ¹² CLEGG | 94 RVUE | $e^+e^- \rightarrow \rho\pi$ |
| 401 ± 63 | | ¹² CLEGG | 94 RVUE | $e^+e^- \rightarrow \omega\pi\pi$ |
| 160 ± 20 | | ATKINSON | 83B OMEG | 20–70 $\gamma p \rightarrow 3\pi X$ |
| 136 ± 46 | | CORDIER | 81 DM1 | $e^+e^- \rightarrow \omega 2\pi$ |
| 99 ± 49 | 21 | ESPOSITO | 80 FRAM | $e^+e^- \rightarrow 3\pi$ |
| 42 ± 17 | | COSME | 79 OSPK 0 | $e^+e^- \rightarrow 3\pi$ |

⁹ From a two Breit-Wigner fit.

¹⁰ From a single Breit-Wigner plus background fit.

¹¹ Using the data of DOLINSKY 91, ANTONELLI 92, AKHMETSHIN 98, and ACHASOV 99E. From a fit to two Breit-Wigner functions interfering between them and with the ω, ϕ tails with fixed (+, -, +) phases.

¹² From a single Breit-Wigner fit.

$\omega(1650)$ DECAY MODES

| Mode | Fraction (Γ_i/Γ) |
|-------------------------------|--------------------------------|
| $\Gamma_1 \quad \rho\pi$ | seen |
| $\Gamma_2 \quad \omega\pi\pi$ | seen |
| $\Gamma_3 \quad e^+e^-$ | seen |

$\omega(1650) \Gamma(i)\Gamma(e^+e^-)/\Gamma(\text{total})$

| $\Gamma(\rho\pi) \times \Gamma(e^+e^-)/\Gamma_{\text{total}}$ | | | | $\Gamma_1\Gamma_3/\Gamma$ |
|---|------|-------------------------|--------|--|
| VALUE (eV) | EVTS | DOCUMENT ID | TECN | COMMENT |
| 134 ± 14 | 435 | ¹³ ANTONELLI | 92 DM2 | 1.34–2.4 $e^+e^- \rightarrow$ hadrons |

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

| | | | | |
|---------|-----|-----------------------|----------|--|
| 27 ± 7 | | ¹⁴ ACHASOV | 99E RVUE | 0.75–1.80 $e^+e^- \rightarrow \pi^+\pi^-\pi^0$ |
| 93 ± 27 | 315 | ANTONELLI | 92 DM2 | 1.34–2.4 $e^+e^- \rightarrow \rho\pi$ |
| 96 ± 35 | | DONNACHIE | 89 RVUE | $e^+e^- \rightarrow \rho\pi$ |

¹³ From a coupled fit of $\rho\pi$ and $\omega\pi\pi$ channels.

¹⁴ Using the data of DOLINSKY 91, ANTONELLI 92, AKHMETSHIN 98, and ACHASOV 99E. From a fit to two Breit-Wigner functions interfering between them and with the ω, ϕ tails with fixed (+, -, +) phases.

| $\Gamma(\omega\pi\pi) \times \Gamma(e^+e^-)/\Gamma_{\text{total}}$ | | | | | $\Gamma_2\Gamma_3/\Gamma$ |
|--|------|-------------------------|--------|---|---------------------------|
| VALUE (keV) | EVTS | DOCUMENT ID | TECN | COMMENT | |
| 170±17 | 435 | ¹⁵ ANTONELLI | 92 DM2 | 1.34–2.4e ⁺ e ⁻ → hadrons | |

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

| | | | | | |
|--------|-----|-------------------------|---------|---|--|
| 135±16 | 435 | ¹⁶ ANTONELLI | 92 DM2 | 1.34–2.4e ⁺ e ⁻ → ωππ | |
| 56±31 | | DONNACHIE | 89 RVUE | e ⁺ e ⁻ → ω2π | |

¹⁵ From a coupled fit of ρπ and ωππ channels.

¹⁶ From a single Breit-Wigner fit.

ω(1650) BRANCHING RATIOS

| $\Gamma(\rho\pi)/\Gamma(\omega\pi\pi)$ | | | | | Γ_1/Γ_2 |
|--|--|-----------------------|----------|--|---------------------|
| VALUE | | DOCUMENT ID | TECN | COMMENT | |
| 0.17±0.05 | | ¹⁷ ACHASOV | 99E RVUE | 0.75–1.80 e ⁺ e ⁻ → π ⁺ π ⁻ π ⁰ | |

¹⁷ Using the data of DOLINSKY 91, ANTONELLI 92, AKHMETSHIN 98, and ACHASOV 99E. From a fit to two Breit-Wigner functions interfering between them and with the ω,φ tails with fixed (+,−,+) phases.

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