

a₂(1700)

$$I^G(J^{PC}) = 1^-(2^{++})$$

OMITTED FROM SUMMARY TABLE

a₂(1700) MASS

| VALUE (MeV) | EVTS | DOCUMENT ID | TECN | CHG | COMMENT |
|-------------------------------------------------------------------------------|------|-------------------------------------|------|--------|---------------------------------------------------------------------------------------------------------------|
| 1732±16 OUR AVERAGE | | Error includes scale factor of 1.9. | | | |
| 1737± 5± 7 | | ABE | 04 | BELL | 10.6 e ⁺ e ⁻ → e ⁺ e ⁻ K ⁺ K ⁻ |
| 1698±44 | | ¹ AMSLER | 02 | CBAR | 0.9 p̄p → π ⁰ ηη |
| 1660±40 | | ABELE | 99B | CBAR | 1.94 p̄p → π ⁰ ηη |
| ● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ● | | | | | |
| 1722± 9±15 | 18k | ² SCHEGELSKY | 06 | RVUE 0 | γγ → π ⁺ π ⁻ π ⁰ |
| 1702± 7 | 80k | ³ UMAN | 06 | E835 | 5.2 p̄p → ηηπ ⁰ |
| 1721±13±44 | 145k | LU | 05 | B852 | 18 π ⁻ p → ωπ ⁻ π ⁰ p |
| 1767±14 | 221 | ⁴ ACCIARRI | 01H | L3 | γγ → K _S ⁰ K _S ⁰ , E _{cm} ^{ee} =91, 183–209 GeV |
| ~ 1775 | | ⁵ GRYGOREV | 99 | SPEC | 40 π ⁻ p → K _S ⁰ K _S ⁰ n |
| 1752±21± 4 | | ACCIARRI | 97T | L3 | γγ → π ⁺ π ⁻ π ⁰ |

¹ T-matrix pole.

² From analysis of L3 data at 183–209 GeV.

³ Statistical error only.

⁴ Spin 2 dominant, isospin not determined, could also be I=1.

⁵ Possibly two J^P = 2⁺ resonances with isospins 0 and 1.

a₂(1700) WIDTH

| VALUE (MeV) | EVTS | DOCUMENT ID | TECN | CHG | COMMENT |
|-------------------------------------------------------------------------------|------|-------------------------------------------------------------|------|--------|---------------------------------------------------------------------------------------------------------------|
| 194± 40 OUR AVERAGE | | Error includes scale factor of 1.6. See the ideogram below. | | | |
| 151± 22±24 | | ABE | 04 | BELL | 10.6 e ⁺ e ⁻ → e ⁺ e ⁻ K ⁺ K ⁻ |
| 265± 55 | | ⁶ AMSLER | 02 | CBAR | 0.9 p̄p → π ⁰ ηη |
| 280± 70 | | ABELE | 99B | CBAR | 1.94 p̄p → π ⁰ ηη |
| ● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ● | | | | | |
| 336± 20±20 | 18k | ⁷ SCHEGELSKY | 06 | RVUE 0 | γγ → π ⁺ π ⁻ π ⁰ |
| 417± 19 | 80k | ⁸ UMAN | 06 | E835 | 5.2 p̄p → ηηπ ⁰ |
| 279± 49±66 | 145k | LU | 05 | B852 | 18 π ⁻ p → ωπ ⁻ π ⁰ p |
| 187± 60 | 221 | ⁹ ACCIARRI | 01H | L3 | γγ → K _S ⁰ K _S ⁰ , E _{cm} ^{ee} =91, 183–209 GeV |
| 150±110±34 | | ACCIARRI | 97T | L3 | γγ → π ⁺ π ⁻ π ⁰ |

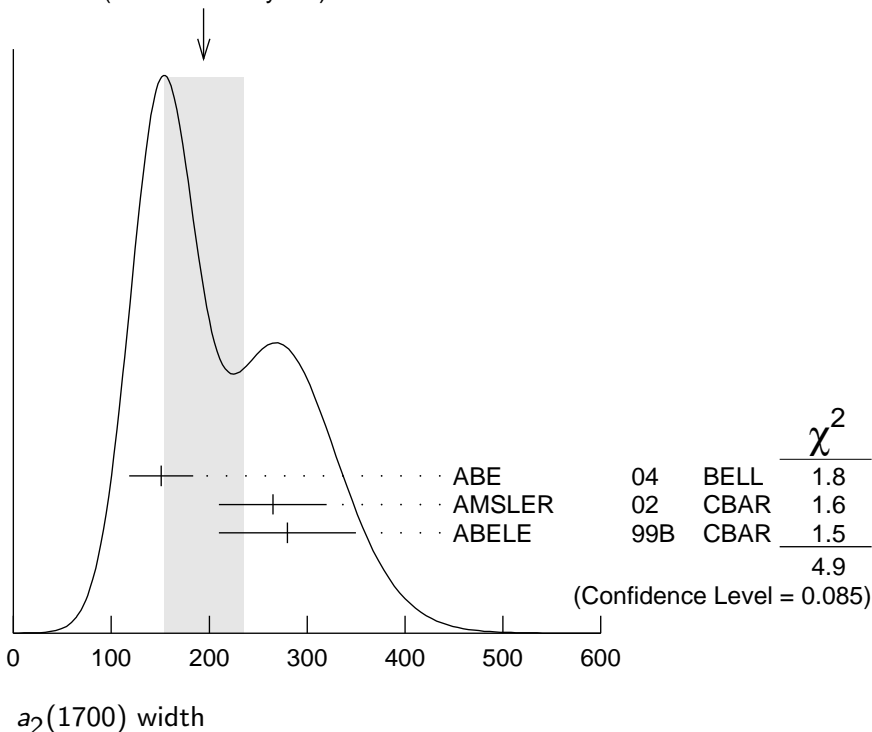
⁶ T-matrix pole.

⁷ From analysis of L3 data at 183–209 GeV.

⁸ Statistical error only.

⁹ Spin 2 dominant, isospin not determined, could also be I=1.

WEIGHTED AVERAGE
194±40 (Error scaled by 1.6)



$a_2(1700)$ DECAY MODES

| Mode | Fraction (Γ_i/Γ) |
|-------------------------------|--------------------------------|
| Γ_1 $\eta\pi$ | seen |
| Γ_2 $\gamma\gamma$ | |
| Γ_3 $\rho\pi$ | |
| Γ_4 $f_2(1270)\pi$ | |
| Γ_5 $K\bar{K}$ | seen |
| Γ_6 $\omega\pi^-\pi^0$ | seen |
| Γ_7 $\omega\rho$ | seen |

$a_2(1700)$ PARTIAL WIDTHS

$\Gamma(\eta\pi)$ Γ_1

| VALUE (MeV) | EVTS | DOCUMENT ID | TECN | COMMENT |
|-------------------------------------------------------------------------------|------|------------------------------|------|----------------------------------------|
| ● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ● | | | | |
| 9.5 ± 2.0 | 870 | ¹⁰ SCHEGELSKY 06A | RVUE | $\gamma\gamma \rightarrow K_S^0 K_S^0$ |

$\Gamma(\gamma\gamma)$ Γ_2

| VALUE (keV) | EVTS | DOCUMENT ID | TECN | COMMENT |
|-------------------------------------------------------------------------------|------|------------------------------|------|----------------------------------------|
| ● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ● | | | | |
| 0.30 ± 0.05 | 870 | ¹⁰ SCHEGELSKY 06A | RVUE | $\gamma\gamma \rightarrow K_S^0 K_S^0$ |

$\Gamma(K\bar{K})$

Γ_5

| VALUE (MeV) | EVTS | DOCUMENT ID | TECN | COMMENT |
|-------------|------|-------------|------|---------|
|-------------|------|-------------|------|---------|

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

| | | | | |
|---------------|-----|------------------------------|------|----------------------------------------|
| 5.0 ± 3.0 | 870 | ¹⁰ SCHEGELSKY 06A | RVUE | $\gamma\gamma \rightarrow K_S^0 K_S^0$ |
|---------------|-----|------------------------------|------|----------------------------------------|

¹⁰ From analysis of L3 data at 91 and 183–209 GeV, using $a_2(1700)$ mass of 1730 MeV and width of 340 MeV, and SU(3) relations.

$a_2(1700) \Gamma(i)\Gamma(\gamma\gamma)/\Gamma(\text{total})$

| $[\Gamma(\rho\pi) + \Gamma(f_2(1270)\pi)] \times \Gamma(\gamma\gamma)/\Gamma_{\text{total}}$ | ($\Gamma_3 + \Gamma_4$) Γ_2/Γ | | | |
|----------------------------------------------------------------------------------------------|---------------------------------------------|-------------|------|---------|
| VALUE (keV) | EVTS | DOCUMENT ID | TECN | COMMENT |

| | | | | |
|--------------------------|--|--------------|----|----------------------------------------------|
| $0.29 \pm 0.04 \pm 0.02$ | | ACCIARRI 97T | L3 | $\gamma\gamma \rightarrow \pi^+ \pi^- \pi^0$ |
|--------------------------|--|--------------|----|----------------------------------------------|

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

| | | | | |
|---------------------------------|-----|-----------------------------|------|----------------------------------------------|
| $0.37^{+0.12}_{-0.08} \pm 0.10$ | 18k | ¹¹ SCHEGELSKY 06 | RVUE | $\gamma\gamma \rightarrow \pi^+ \pi^- \pi^0$ |
|---------------------------------|-----|-----------------------------|------|----------------------------------------------|

$\Gamma(K\bar{K}) \times \Gamma(\gamma\gamma)/\Gamma_{\text{total}}$

$\Gamma_5\Gamma_2/\Gamma$

| VALUE (eV) | DOCUMENT ID | TECN | COMMENT |
|------------|-------------|------|---------|
|------------|-------------|------|---------|

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

| | | | |
|------------------------|----------------------|------|--------------------------------------------|
| $20.6 \pm 4.2 \pm 4.6$ | ¹² ABE 04 | BELL | $10.6 e^+ e^- \rightarrow e^+ e^- K^+ K^-$ |
|------------------------|----------------------|------|--------------------------------------------|

| | | | |
|--------------------|----------------------------|----|----------------------------------------------------------------------------------------------|
| $49 \pm 11 \pm 13$ | ¹³ ACCIARRI 01H | L3 | $\gamma\gamma \rightarrow K_S^0 K_S^0, E_{\text{cm}}^{ee} = 91, 183\text{--}209 \text{ GeV}$ |
|--------------------|----------------------------|----|----------------------------------------------------------------------------------------------|

¹¹ From analysis of L3 data at 183–209 GeV.

¹² Assuming spin 2.

¹³ Spin 2 dominant, isospin not determined, could also be $I=1$.

$a_2(1700)$ BRANCHING RATIOS

$\Gamma(\rho\pi)/\Gamma(f_2(1270)\pi)$

Γ_3/Γ_4

| VALUE | EVTS | DOCUMENT ID | TECN | COMMENT |
|-------|------|-------------|------|---------|
|-------|------|-------------|------|---------|

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

| | | | | |
|-----------------------|-----|-----------------------------|------|----------------------------------------------|
| $3.4 \pm 0.4 \pm 0.1$ | 18k | ¹⁴ SCHEGELSKY 06 | RVUE | $\gamma\gamma \rightarrow \pi^+ \pi^- \pi^0$ |
|-----------------------|-----|-----------------------------|------|----------------------------------------------|

¹⁴ From analysis of L3 data at 183–209 GeV.

$a_2(1700)$ REFERENCES

| | | | |
|----------------|-----------------------------|-------------------------------|--------------------------|
| SCHEGELSKY 06 | EPJ A27 199 | V.A. Schegelsky <i>et al.</i> | |
| SCHEGELSKY 06A | EPJ A27 207 | V.A. Schegelsky <i>et al.</i> | |
| UMAN 06 | PR D73 052009 | I. Uman <i>et al.</i> | (FNAL E835) |
| LU 05 | PRL 94 032002 | M. Lu <i>et al.</i> | (BNL E852 Collab.) |
| ABE 04 | EPJ C32 323 | K. Abe <i>et al.</i> | (BELLE Collab.) |
| AMSLER 02 | EPJ C23 29 | C. Amsler <i>et al.</i> | |
| ACCIARRI 01H | PL B501 173 | M. Acciarri <i>et al.</i> | (L3 Collab.) |
| ABELE 99B | EPJ C8 67 | A. Abele <i>et al.</i> | (Crystal Barrel Collab.) |
| GRYGOREV 99 | PAN 62 470 | V.K. Grygorev <i>et al.</i> | |
| | Translated from YAF 62 513. | | |
| ACCIARRI 97T | PL B413 147 | M. Acciarri <i>et al.</i> | (L3 Collab.) |

OTHER RELATED PAPERS

| | | | |
|--------------|-------------|---------------------------|------------------|
| BAKER 03 | PL B563 140 | C.A. Baker <i>et al.</i> | |
| BARBERIS 00H | PL B488 225 | D. Barberis <i>et al.</i> | (WA 102 Collab.) |