

X(4360)

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

OMITTED FROM SUMMARY TABLE

Seen in radiative return from e^+e^- collisions at $\sqrt{s} = 9.54\text{--}10.58$ GeV by AUBERT 07S and WANG 07D. See also the review under the X(3872) particle listings. (See the index for the page number.)

X(4360) MASS

| VALUE (MeV) | DOCUMENT ID | TECN | COMMENT |
|---|---------------------|----------|---|
| 4361 ± 9 ± 9 | ¹ WANG | 07D BELL | 10.58 $e^+e^- \rightarrow \gamma\pi^+\pi^-\psi(2S)$ |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | |
| 4355 ⁺⁹ ₋₁₀ ± 9 | ² LIU | 08H RVUE | 10.58 $e^+e^- \rightarrow \psi(2S)\pi^+\pi^-\gamma$ |
| 4324 ± 24 | ³ AUBERT | 07S BABR | 10.58 $e^+e^- \rightarrow \gamma\pi^+\pi^-\psi(2S)$ |
| ¹ From a two-resonance fit. | | | |
| ² From a combined fit of AUBERT 07S and WANG 07D data with two resonances. | | | |
| ³ From a single-resonance fit. Systematic errors not estimated. | | | |

X(4360) WIDTH

| VALUE (MeV) | DOCUMENT ID | TECN | COMMENT |
|---|---------------------|----------|---|
| 74 ± 15 ± 10 | ⁴ WANG | 07D BELL | 10.58 $e^+e^- \rightarrow \gamma\pi^+\pi^-\psi(2S)$ |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | |
| 103 ⁺¹⁷ ₋₁₅ ± 11 | ⁵ LIU | 08H RVUE | 10.58 $e^+e^- \rightarrow \psi(2S)\pi^+\pi^-\gamma$ |
| 172 ± 33 | ⁶ AUBERT | 07S BABR | 10.58 $e^+e^- \rightarrow \gamma\pi^+\pi^-\psi(2S)$ |
| ⁴ From a two-resonance fit. | | | |
| ⁵ From a combined fit of AUBERT 07S and WANG 07D data with two resonances. | | | |
| ⁶ From a single-resonance fit. Systematic errors not estimated. | | | |

X(4360) DECAY MODES

| Mode | Fraction (Γ_i/Γ) |
|---------------------------------|--------------------------------|
| Γ_1 e^+e^- | |
| Γ_2 $\psi(2S)\pi^+\pi^-$ | seen |
| Γ_3 $D^0 D^{*-} \pi^+$ | |

X(4360) $\Gamma(i)\Gamma(e^+e^-)/\Gamma(\text{total})$

| $\Gamma(\psi(2S)\pi^+\pi^-) \times \Gamma(e^+e^-)/\Gamma_{\text{total}}$ | $\Gamma_2\Gamma_1/\Gamma$ | | |
|---|---------------------------|----------|---|
| VALUE (eV) | DOCUMENT ID | TECN | COMMENT |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | |
| 11.1 ^{+1.3} _{-1.2} | ⁷ LIU | 08H RVUE | 10.58 $e^+e^- \rightarrow \psi(2S)\pi^+\pi^-\gamma$ |
| 12.3 ± 1.2 | ⁸ LIU | 08H RVUE | 10.58 $e^+e^- \rightarrow \psi(2S)\pi^+\pi^-\gamma$ |
| 10.4 ± 1.7 ± 1.5 | ⁹ WANG | 07D BELL | 10.58 $e^+e^- \rightarrow \gamma\pi^+\pi^-\psi(2S)$ |
| 11.8 ± 1.8 ± 1.4 | ¹⁰ WANG | 07D BELL | 10.58 $e^+e^- \rightarrow \gamma\pi^+\pi^-\psi(2S)$ |

- ⁷ Solution I in a combined fit of AUBERT 07S and WANG 07D data with two resonances.
⁸ Solution II in a combined fit of AUBERT 07S and WANG 07D data with two resonances.
⁹ Solution I of two equivalent solutions in a fit using two interfering resonances.
¹⁰ Solution II of two equivalent solutions in a fit using two interfering resonances.

X(4360) BRANCHING RATIOS

| $\Gamma(D^0 D^{*-} \pi^+)/\Gamma(\psi(2S)\pi^+\pi^-)$ | | | | | Γ_3/Γ_2 |
|---|-----|---------------------------|------|--|--|
| VALUE | CL% | DOCUMENT ID | TECN | COMMENT | |
| <8 | 90 | PAKHLOVA 09 | BELL | $e^+ e^- \rightarrow X(4360) \rightarrow D^0 D^{*-} \pi^+$ | |
| $\Gamma(D^0 D^{*-} \pi^+)/\Gamma_{\text{total}} \times \Gamma(e^+ e^-)/\Gamma_{\text{total}}$ | | | | | $\Gamma_3/\Gamma \times \Gamma_1/\Gamma$ |
| VALUE | CL% | DOCUMENT ID | TECN | COMMENT | |
| <0.72 × 10 ⁻⁶ | 90 | ¹¹ PAKHLOVA 09 | BELL | $e^+ e^- \rightarrow X(4360) \rightarrow D^0 D^{*-} \pi^+$ | |

¹¹ Using $4355^{+9}_{-10} \pm 9$ MeV for the mass of X(4360).

X(4360) REFERENCES

| | | | |
|-------------|----------------|-------------------------------|-----------------|
| PAKHLOVA 09 | PR D80 091101R | G. Pakhlova <i>et al.</i> | (BELLE Collab.) |
| LIU 08H | PR D78 014032 | Z.Q. Liu, X.S. Qin, C.Z. Yuan | |
| AUBERT 07S | PRL 98 212001 | B. Aubert <i>et al.</i> | (BABAR Collab.) |
| WANG 07D | PRL 99 142002 | X.L. Wang <i>et al.</i> | (BELLE Collab.) |