

$a_1(1260)$

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

See also our review under the $a_1(1260)$ in PDG 06, Journal of Physics, G **33** 1 (2006).

$a_1(1260)$ MASS

| VALUE (MeV) | EVTS | DOCUMENT ID | TECN | COMMENT |
|-------------------------------------------------------------------------------|------|----------------------------|-----------|-----------------------------------------------------------------------------------------------|
| 1230±40 OUR ESTIMATE | | | | |
| 1255± 6⁺⁷₋₁₇ | 420k | ALEKSEEV | 10 COMP | 190 $\pi^- Pb \rightarrow \pi^- \pi^- \pi^+ Pb'$ |
| ● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ● | | | | |
| 1243±12±20 | | ¹ AUBERT | 07AU BABR | 10.6 $e^+ e^- \rightarrow \rho^0 \rho^\pm \pi^\mp \gamma$ |
| 1230–1270 | 6360 | ² LINK | 07A FOCS | $D^0 \rightarrow \pi^- \pi^+ \pi^- \pi^+$ |
| 1203± 3 | | ³ GOMEZ-DUM..04 | RVUE | $\tau^+ \rightarrow \pi^+ \pi^+ \pi^- \nu_\tau$ |
| 1330±24 | 90k | SALVINI | 04 OBLX | $\bar{p} p \rightarrow 2\pi^+ 2\pi^-$ |
| 1331±10± 3 | 37k | ⁴ ASNER | 00 CLE2 | 10.6 $e^+ e^- \rightarrow \tau^+ \tau^-$, $\tau^- \rightarrow \pi^- \pi^0 \pi^0 \nu_\tau$ |
| 1255± 7± 6 | 5904 | ⁵ ABREU | 98G DLPH | $e^+ e^-$ |
| 1207± 5± 8 | 5904 | ⁶ ABREU | 98G DLPH | $e^+ e^-$ |
| 1196± 4± 5 | 5904 | ^{7,8} ABREU | 98G DLPH | $e^+ e^-$ |
| 1240±10 | | BARBERIS | 98B | 450 $pp \rightarrow p_f \pi^+ \pi^- \pi^0 p_s$ |
| 1262± 9± 7 | | ^{5,9} ACKERSTAFF | 97R OPAL | $E_{cm}^{ee} = 88-94$, $\tau \rightarrow 3\pi\nu$ |
| 1210± 7± 2 | | ^{6,9} ACKERSTAFF | 97R OPAL | $E_{cm}^{ee} = 88-94$, $\tau \rightarrow 3\pi\nu$ |
| 1211± 7 ⁺⁵⁰ ₋₀ | | ⁶ ALBRECHT | 93C ARG | $\tau^+ \rightarrow \pi^+ \pi^+ \pi^- \nu$ |
| 1121± 8 | | ¹⁰ ANDO | 92 SPEC | 8 $\pi^- p \rightarrow \pi^+ \pi^- \pi^0 n$ |
| 1242±37 | | ¹¹ IVANOV | 91 RVUE | $\tau \rightarrow \pi^+ \pi^+ \pi^- \nu$ |
| 1260±14 | | ¹² IVANOV | 91 RVUE | $\tau \rightarrow \pi^+ \pi^+ \pi^- \nu$ |
| 1250± 9 | | ¹³ IVANOV | 91 RVUE | $\tau \rightarrow \pi^+ \pi^+ \pi^- \nu$ |
| 1208±15 | | ARMSTRONG | 90 OMEG | 300.0 $pp \rightarrow pp \pi^+ \pi^- \pi^0$ |
| 1220±15 | | ¹⁴ ISGUR | 89 RVUE | $\tau^+ \rightarrow \pi^+ \pi^+ \pi^- \nu$ |
| 1260±25 | | ¹⁵ BOWLER | 88 RVUE | |
| 1166±18±11 | | BAND | 87 MAC | $\tau^+ \rightarrow \pi^+ \pi^+ \pi^- \nu$ |
| 1164±41±23 | | BAND | 87 MAC | $\tau^+ \rightarrow \pi^+ \pi^0 \pi^0 \nu$ |
| 1250±40 | | ¹⁴ TORNQVIST | 87 RVUE | |
| 1046±11 | | ALBRECHT | 86B ARG | $\tau^+ \rightarrow \pi^+ \pi^+ \pi^- \nu$ |
| 1056±20±15 | | RUCKSTUHL | 86 DLCO | $\tau^+ \rightarrow \pi^+ \pi^+ \pi^- \nu$ |
| 1194±14±10 | | SCHMIDKE | 86 MRK2 | $\tau^+ \rightarrow \pi^+ \pi^+ \pi^- \nu$ |
| 1255±23 | | BELLINI | 85 SPEC | 40 $\pi^- A \rightarrow \pi^- \pi^+ \pi^- A$ |
| 1240±80 | | ¹⁶ DANKOWY... | 81 SPEC | 8.45 $\pi^- p \rightarrow n 3\pi$ |
| 1280±30 | | ¹⁶ DAUM | 81B CNTR | 63,94 $\pi^- p \rightarrow p 3\pi$ |
| 1041±13 | | ¹⁷ GAVILLET | 77 HBC | 4.2 $K^- p \rightarrow \Sigma 3\pi$ |

¹ The $\rho^\pm \pi^\mp$ state can be also due to the $\pi(1300)$.

² Using the Breit-Wigner parameterization; strong correlation between mass and width.

³ Using the data of BARATE 98R.

⁴ From a fit to the 3π mass spectrum including the $K\bar{K}^*(892)$ threshold.

⁵ Uses the model of KUHN 90.

- ⁶ Uses the model of ISGUR 89.
- ⁷ Includes the effect of a possible a_1' state.
- ⁸ Uses the model of FEINDT 90.
- ⁹ Supersedes AKERS 95P.
- ¹⁰ Average and spread of values using 2 variants of the model of BOWLER 75.
- ¹¹ Reanalysis of RUCKSTUHL 86.
- ¹² Reanalysis of SCHMIDKE 86.
- ¹³ Reanalysis of ALBRECHT 86B.
- ¹⁴ From a combined reanalysis of ALBRECHT 86B, SCHMIDKE 86, and RUCKSTUHL 86.
- ¹⁵ From a combined reanalysis of ALBRECHT 86B and DAUM 81B.
- ¹⁶ Uses the model of BOWLER 75.
- ¹⁷ Produced in K^- backward scattering.

$a_1(1260)$ WIDTH

| VALUE (MeV) | EVTS | DOCUMENT ID | TECN | COMMENT |
|-------------------------------------------------------------------------------|------|-----------------------------|-----------|-----------------------------------------------------------------------------------------------|
| 250 to 600 OUR ESTIMATE | | | | |
| $367 \pm 9^+_{-25}$ | 420k | ALEKSEEV | 10 COMP | 190 $\pi^- Pb \rightarrow \pi^- \pi^- \pi^+ Pb'$ |
| ● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ● | | | | |
| $410 \pm 31 \pm 30$ | | ¹⁸ AUBERT | 07AU BABR | $10.6 e^+ e^- \rightarrow \rho^0 \rho^\pm \pi^\mp \gamma$ |
| 520–680 | 6360 | ¹⁹ LINK | 07A FOCS | $D^0 \rightarrow \pi^- \pi^+ \pi^- \pi^+$ |
| 480 ± 20 | | ²⁰ GOMEZ-DUM. | 04 RVUE | $\tau^+ \rightarrow \pi^+ \pi^+ \pi^- \nu_\tau$ |
| 580 ± 41 | 90k | SALVINI | 04 OBLX | $\bar{p}p \rightarrow 2\pi^+ 2\pi^-$ |
| 460 ± 85 | 205 | ²¹ DRUTSKOY | 02 BELL | $B \rightarrow D^{(*)} K^- K^{*0}$ |
| $814 \pm 36 \pm 13$ | 37k | ²² ASNER | 00 CLE2 | $10.6 e^+ e^- \rightarrow \tau^+ \tau^-$, $\tau^- \rightarrow \pi^- \pi^0 \pi^0 \nu_\tau$ |
| 450 ± 50 | 22k | ²³ AKHMETSHIN | 99E CMD2 | $1.05-1.38 e^+ e^- \rightarrow \pi^+ \pi^- \pi^0 \pi^0$ |
| 570 ± 10 | | ²⁴ BONDAR | 99 RVUE | $e^+ e^- \rightarrow 4\pi, \tau \rightarrow 3\pi \nu_\tau$ |
| $587 \pm 27 \pm 21$ | 5904 | ²⁵ ABREU | 98G DLPH | $e^+ e^-$ |
| $478 \pm 3 \pm 15$ | 5904 | ²⁶ ABREU | 98G DLPH | $e^+ e^-$ |
| $425 \pm 14 \pm 8$ | 5904 | ^{27,28} ABREU | 98G DLPH | $e^+ e^-$ |
| 400 ± 35 | | BARBERIS | 98B | $450 pp \rightarrow p_f \pi^+ \pi^- \pi^0 p_s$ |
| $621 \pm 32 \pm 58$ | | ^{25,29} ACKERSTAFF | 97R OPAL | $E_{cm}^{ee} = 88-94, \tau \rightarrow 3\pi \nu$ |
| $457 \pm 15 \pm 17$ | | ^{26,29} ACKERSTAFF | 97R OPAL | $E_{cm}^{ee} = 88-94, \tau \rightarrow 3\pi \nu$ |
| $446 \pm 21^+_{-140}$ | | ²⁶ ALBRECHT | 93C ARG | $\tau^+ \rightarrow \pi^+ \pi^+ \pi^- \nu$ |
| 239 ± 11 | | ANDO | 92 SPEC | $8 \pi^- p \rightarrow \pi^+ \pi^- \pi^0 n$ |
| $266 \pm 13 \pm 4$ | | ³⁰ ANDO | 92 SPEC | $8 \pi^- p \rightarrow \pi^+ \pi^- \pi^0 n$ |
| 465^+_{-143} | | ³¹ IVANOV | 91 RVUE | $\tau \rightarrow \pi^+ \pi^+ \pi^- \nu$ |
| 298^+_{-34} | | ³² IVANOV | 91 RVUE | $\tau \rightarrow \pi^+ \pi^+ \pi^- \nu$ |
| 488 ± 32 | | ³³ IVANOV | 91 RVUE | $\tau \rightarrow \pi^+ \pi^+ \pi^- \nu$ |
| 430 ± 50 | | ARMSTRONG | 90 OMEG | $300.0 pp \rightarrow p p \pi^+ \pi^- \pi^0$ |
| 420 ± 40 | | ³⁴ ISGUR | 89 RVUE | $\tau^+ \rightarrow \pi^+ \pi^+ \pi^- \nu$ |
| 396 ± 43 | | ³⁵ BOWLER | 88 RVUE | |
| $405 \pm 75 \pm 25$ | | BAND | 87 MAC | $\tau^+ \rightarrow \pi^+ \pi^+ \pi^- \nu$ |
| $419 \pm 108 \pm 57$ | | BAND | 87 MAC | $\tau^+ \rightarrow \pi^+ \pi^0 \pi^0 \nu$ |

| | | | | |
|------------------------------------------|--------------------------|-----|------|----------------------------------------------|
| 521 ± 27 | ALBRECHT | 86B | ARG | $\tau^+ \rightarrow \pi^+ \pi^+ \pi^- \nu$ |
| 476 ⁺¹³² ₋₁₂₀ ± 54 | RUCKSTUHL | 86 | DLCO | $\tau^+ \rightarrow \pi^+ \pi^+ \pi^- \nu$ |
| 462 ± 56 ± 30 | SCHMIDKE | 86 | MRK2 | $\tau^+ \rightarrow \pi^+ \pi^+ \pi^- \nu$ |
| 292 ± 40 | BELLINI | 85 | SPEC | 40 $\pi^- A \rightarrow \pi^- \pi^+ \pi^- A$ |
| 380 ± 100 | ³⁶ DANKOWY... | 81 | SPEC | 8.45 $\pi^- p \rightarrow n 3\pi$ |
| 300 ± 50 | ³⁶ DAUM | 81B | CNTR | 63,94 $\pi^- p \rightarrow p 3\pi$ |
| 230 ± 50 | ³⁷ GAVILLET | 77 | HBC | 4.2 $K^- p \rightarrow \Sigma 3\pi$ |

¹⁸ The $\rho^\pm \pi^\mp$ state can be also due to the $\pi(1300)$.

¹⁹ Using the Breit-Wigner parameterization; strong correlation between mass and width.

²⁰ Using the data of BARATE 98R.

²¹ From a fit of the $K^- K^{*0}$ distribution assuming $m_{a_1} = 1230$ MeV and purely resonant production of the $K^- K^{*0}$ system.

²² From a fit to the 3π mass spectrum including the $K\bar{K}^*(892)$ threshold.

²³ Using the $a_1(1260)$ mass of 1230 MeV.

²⁴ From AKHMETSHIN 99E and ASNER 00 data using the $a_1(1260)$ mass of 1230 MeV.

²⁵ Uses the model of KUHN 90.

²⁶ Uses the model of ISGUR 89.

²⁷ Includes the effect of a possible a_1' state.

²⁸ Uses the model of FEINDT 90.

²⁹ Supersedes AKERS 95P.

³⁰ Average and spread of values using 2 variants of the model of BOWLER 75.

³¹ Reanalysis of RUCKSTUHL 86.

³² Reanalysis of SCHMIDKE 86.

³³ Reanalysis of ALBRECHT 86B.

³⁴ From a combined reanalysis of ALBRECHT 86B, SCHMIDKE 86, and RUCKSTUHL 86.

³⁵ From a combined reanalysis of ALBRECHT 86B and DAUM 81B.

³⁶ Uses the model of BOWLER 75.

³⁷ Produced in K^- backward scattering.

$a_1(1260)$ DECAY MODES

| Mode | Fraction (Γ_i/Γ) |
|-----------------------------------------------|--------------------------------|
| Γ_1 $\pi^+ \pi^- \pi^0$ | |
| Γ_2 $\pi^0 \pi^0 \pi^0$ | |
| Γ_3 $(\rho\pi)_{S\text{-wave}}$ | seen |
| Γ_4 $(\rho\pi)_{D\text{-wave}}$ | seen |
| Γ_5 $(\rho(1450)\pi)_{S\text{-wave}}$ | seen |
| Γ_6 $(\rho(1450)\pi)_{D\text{-wave}}$ | seen |
| Γ_7 $\sigma\pi$ | seen |
| Γ_8 $f_0(980)\pi$ | not seen |
| Γ_9 $f_0(1370)\pi$ | seen |
| Γ_{10} $f_2(1270)\pi$ | seen |
| Γ_{11} $K\bar{K}^*(892) + \text{c.c.}$ | seen |
| Γ_{12} $\pi\gamma$ | seen |

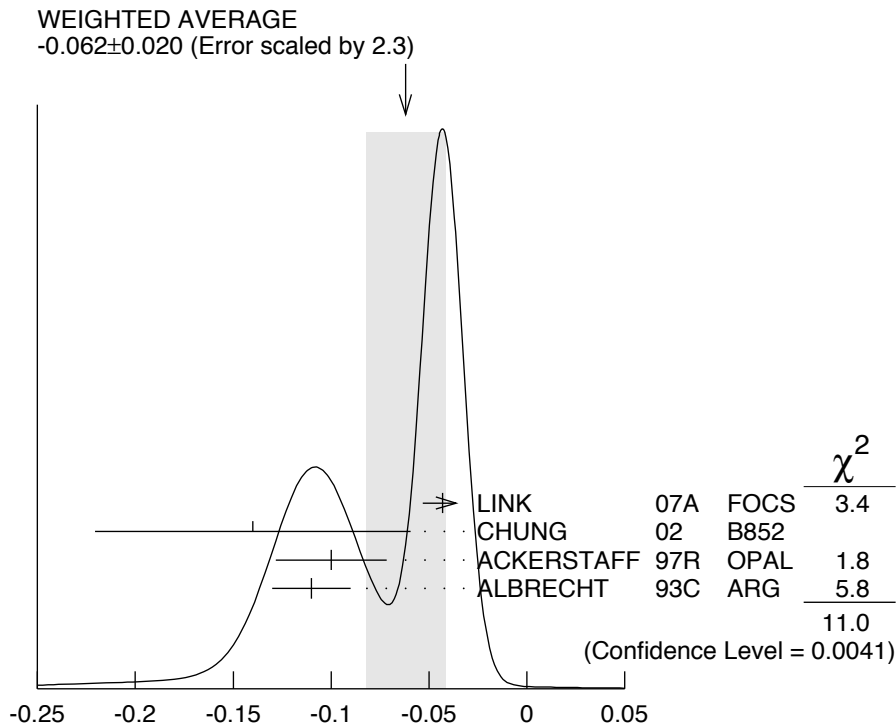
$a_1(1260)$ PARTIAL WIDTHS

| $\Gamma(\pi\gamma)$ | | | | Γ_{12} |
|---------------------|--------------------|-------------|----------------------------------|---------------|
| <u>VALUE (keV)</u> | <u>DOCUMENT ID</u> | <u>TECN</u> | <u>COMMENT</u> | |
| 640±246 | ZIELINSKI | 84C SPEC | 200 $\pi^+ Z \rightarrow Z 3\pi$ | |

D -wave/ S -wave AMPLITUDE RATIO IN DECAY OF $a_1(1260) \rightarrow \rho\pi$

| <u>VALUE</u> | <u>DOCUMENT ID</u> | <u>TECN</u> | <u>COMMENT</u> | |
|---------------------------------|-------------------------------------------------------------|-------------|-------------------------------------------------|--|
| -0.062±0.020 OUR AVERAGE | Error includes scale factor of 2.3. See the ideogram below. | | | |
| -0.043±0.009±0.005 | LINK | 07A FOCS | $D^0 \rightarrow \pi^- \pi^+ \pi^- \pi^+$ | |
| -0.14 ±0.04 ±0.07 | ³⁸ CHUNG | 02 B852 | 18.3 $\pi^- p \rightarrow \pi^+ \pi^- \pi^- p$ | |
| -0.10 ±0.02 ±0.02 | ^{39,40} ACKERSTAFF | 97R OPAL | $E_{cm}^{ee} = 88-94, \tau \rightarrow 3\pi\nu$ | |
| -0.11 ±0.02 | ³⁹ ALBRECHT | 93C ARG | $\tau^+ \rightarrow \pi^+ \pi^+ \pi^- \nu$ | |

³⁸ Deck-type background not subtracted.
³⁹ Uses the model of ISGUR 89.
⁴⁰ Supersedes AKERS 95P.



D -wave/ S -wave AMPLITUDE RATIO IN DECAY OF $a_1(1260) \rightarrow \rho\pi$

$a_1(1260)$ BRANCHING RATIOS

| $\Gamma((\rho\pi)_{S\text{-wave}})/\Gamma_{\text{total}}$ | | | | Γ_3/Γ |
|-----------------------------------------------------------|-----------------------------------------------------------------------|---------------------|-------------|-----------------------------------------------------------------------------------------------|
| <u>VALUE (units 10^{-2})</u> | <u>EVTS</u> | <u>DOCUMENT ID</u> | <u>TECN</u> | <u>COMMENT</u> |
| ••• | We do not use the following data for averages, fits, limits, etc. ••• | | | |
| 60.19 | 37k | ⁴¹ ASNER | 00 CLE2 | 10.6 $e^+ e^- \rightarrow \tau^+ \tau^-$, $\tau^- \rightarrow \pi^- \pi^0 \pi^0 \nu_\tau$ |

$\Gamma((\rho\pi)_{D\text{-wave}})/\Gamma_{\text{total}}$ Γ_4/Γ

| <u>VALUE (units 10^{-2})</u> | <u>EVTS</u> | <u>DOCUMENT ID</u> | <u>TECN</u> | <u>COMMENT</u> |
|-------------------------------------------|-------------|--------------------|-------------|----------------|
|-------------------------------------------|-------------|--------------------|-------------|----------------|

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

| | | | | |
|--------------------|-----|---------------------|----|-----------------------------------------------------------------------------------------------|
| 1.30 ± 0.60 ± 0.22 | 37k | ⁴¹ ASNER | 00 | CLE2 10.6 $e^+e^- \rightarrow \tau^+\tau^-$, $\tau^- \rightarrow \pi^-\pi^0\pi^0\nu_\tau$ |
|--------------------|-----|---------------------|----|-----------------------------------------------------------------------------------------------|

$\Gamma((\rho(1450)\pi)_{S\text{-wave}})/\Gamma_{\text{total}}$ Γ_5/Γ

| <u>VALUE (units 10^{-2})</u> | <u>EVTS</u> | <u>DOCUMENT ID</u> | <u>TECN</u> | <u>COMMENT</u> |
|-------------------------------------------|-------------|--------------------|-------------|----------------|
|-------------------------------------------|-------------|--------------------|-------------|----------------|

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

| | | | | |
|--------------------|-----|------------------------|----|-----------------------------------------------------------------------------------------------|
| 0.56 ± 0.84 ± 0.32 | 37k | ^{41,42} ASNER | 00 | CLE2 10.6 $e^+e^- \rightarrow \tau^+\tau^-$, $\tau^- \rightarrow \pi^-\pi^0\pi^0\nu_\tau$ |
|--------------------|-----|------------------------|----|-----------------------------------------------------------------------------------------------|

$\Gamma((\rho(1450)\pi)_{D\text{-wave}})/\Gamma_{\text{total}}$ Γ_6/Γ

| <u>VALUE (units 10^{-2})</u> | <u>EVTS</u> | <u>DOCUMENT ID</u> | <u>TECN</u> | <u>COMMENT</u> |
|-------------------------------------------|-------------|--------------------|-------------|----------------|
|-------------------------------------------|-------------|--------------------|-------------|----------------|

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

| | | | | |
|--------------------|-----|------------------------|----|-----------------------------------------------------------------------------------------------|
| 2.04 ± 1.20 ± 0.28 | 37k | ^{41,42} ASNER | 00 | CLE2 10.6 $e^+e^- \rightarrow \tau^+\tau^-$, $\tau^- \rightarrow \pi^-\pi^0\pi^0\nu_\tau$ |
|--------------------|-----|------------------------|----|-----------------------------------------------------------------------------------------------|

$\Gamma(\sigma\pi)/\Gamma_{\text{total}}$ Γ_7/Γ

| <u>VALUE (units 10^{-2})</u> | <u>EVTS</u> | <u>DOCUMENT ID</u> | <u>TECN</u> | <u>COMMENT</u> |
|-------------------------------------------|-------------|--------------------|-------------|----------------|
|-------------------------------------------|-------------|--------------------|-------------|----------------|

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

| | | | | |
|---------------------|-----|------------------------|----|-----------------------------------------------------------------------------------------------|
| seen | | CHUNG | 02 | B852 18.3 $\pi^- p \rightarrow$ $\pi^+\pi^-\pi^- p$ |
| 18.76 ± 4.29 ± 1.48 | 37k | ^{41,43} ASNER | 00 | CLE2 10.6 $e^+e^- \rightarrow \tau^+\tau^-$, $\tau^- \rightarrow \pi^-\pi^0\pi^0\nu_\tau$ |

$\Gamma(f_0(980)\pi)/\Gamma_{\text{total}}$ Γ_8/Γ

| <u>VALUE (units 10^{-2})</u> | <u>EVTS</u> | <u>DOCUMENT ID</u> | <u>TECN</u> | <u>COMMENT</u> |
|-------------------------------------------|-------------|--------------------|-------------|----------------|
|-------------------------------------------|-------------|--------------------|-------------|----------------|

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

| | | | | |
|----------|-----|-------|----|-----------------------------------------------------------------------------------------------|
| not seen | 37k | ASNER | 00 | CLE2 10.6 $e^+e^- \rightarrow \tau^+\tau^-$, $\tau^- \rightarrow \pi^-\pi^0\pi^0\nu_\tau$ |
|----------|-----|-------|----|-----------------------------------------------------------------------------------------------|

$\Gamma(f_0(1370)\pi)/\Gamma_{\text{total}}$ Γ_9/Γ

| <u>VALUE (units 10^{-2})</u> | <u>EVTS</u> | <u>DOCUMENT ID</u> | <u>TECN</u> | <u>COMMENT</u> |
|-------------------------------------------|-------------|--------------------|-------------|----------------|
|-------------------------------------------|-------------|--------------------|-------------|----------------|

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

| | | | | |
|--------------------|-----|------------------------|----|-----------------------------------------------------------------------------------------------|
| 7.40 ± 2.71 ± 1.26 | 37k | ^{41,44} ASNER | 00 | CLE2 10.6 $e^+e^- \rightarrow \tau^+\tau^-$, $\tau^- \rightarrow \pi^-\pi^0\pi^0\nu_\tau$ |
|--------------------|-----|------------------------|----|-----------------------------------------------------------------------------------------------|

$\Gamma(f_2(1270)\pi)/\Gamma_{\text{total}}$ Γ_{10}/Γ

| <u>VALUE (units 10^{-2})</u> | <u>EVTS</u> | <u>DOCUMENT ID</u> | <u>TECN</u> | <u>COMMENT</u> |
|-------------------------------------------|-------------|--------------------|-------------|----------------|
|-------------------------------------------|-------------|--------------------|-------------|----------------|

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

| | | | | |
|--------------------|-----|------------------------|----|-----------------------------------------------------------------------------------------------|
| 1.19 ± 0.49 ± 0.17 | 37k | ^{41,45} ASNER | 00 | CLE2 10.6 $e^+e^- \rightarrow \tau^+\tau^-$, $\tau^- \rightarrow \pi^-\pi^0\pi^0\nu_\tau$ |
|--------------------|-----|------------------------|----|-----------------------------------------------------------------------------------------------|

$\Gamma(K\bar{K}^*(892) + \text{c.c.})/\Gamma_{\text{total}}$ Γ_{11}/Γ

| VALUE (units 10^{-2}) | EVTS | DOCUMENT ID | TECN | COMMENT |
|-------------------------------------------------------------------------------|------|-------------|------|----------------------------------------------------------------------------------------------------|
| ● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ● | | | | |
| 2.2 ± 0.5 | 2255 | 46 COAN | 04 | CLEO $\tau^- \rightarrow K^- \pi^- K^+ \nu_\tau$ |
| 8 to 15 | 205 | 47 DRUTSKOY | 02 | BELL $B \rightarrow D^{(*)} K^- K^{*0}$ |
| $3.3 \pm 0.5 \pm 0.1$ | 37k | 48 ASNER | 00 | CLE2 $10.6 e^+ e^- \rightarrow \tau^+ \tau^-$, $\tau^- \rightarrow \pi^- \pi^0 \pi^0 \nu_\tau$ |
| 2.6 ± 0.3 | | 49 BARATE | 99R | ALEP $\tau \rightarrow K\bar{K}\pi\nu_\tau$ |

$\Gamma(\sigma\pi)/\Gamma((\rho\pi)_{S\text{-wave}})$ Γ_7/Γ_3

| VALUE | EVTS | DOCUMENT ID | TECN | COMMENT |
|-------------------------------------------------------------------------------|------|-------------|------|--------------------------------------------------------------|
| ● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ● | | | | |
| 0.06 ± 0.05 | 90k | SALVINI | 04 | OBLX $\bar{p}p \rightarrow 2\pi^+ 2\pi^-$ |
| ~ 0.3 | 28k | AKHMETSHIN | 99E | CMD2 $1.05-1.38 e^+ e^- \rightarrow \pi^+ \pi^- \pi^+ \pi^-$ |
| 0.003 ± 0.003 | | 50 LONGACRE | 82 | RVUE |

$\Gamma(\pi^0\pi^0\pi^0)/\Gamma(\pi^+\pi^-\pi^0)$ Γ_2/Γ_1

| VALUE | CL% | DOCUMENT ID | COMMENT |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-------------|----------------------------------------|
| ● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ● | | | |
| < 0.008 | 90 | 51 BARBERIS | 01 450 $pp \rightarrow p_f 3\pi^0 p_s$ |
| 41 From a fit to the Dalitz plot. | | | |
| 42 Assuming for $\rho(1450)$ mass and width of 1370 and 386 MeV respectively. | | | |
| 43 Assuming for σ mass and width of 860 and 880 MeV respectively. | | | |
| 44 Assuming for $f_0(1370)$ mass and width of 1186 and 350 MeV respectively. | | | |
| 45 Assuming for $f_2(1270)$ mass and width of 1275 and 185 MeV respectively. | | | |
| 46 Using structure functions from KUHN 92 and DECKER 93A and $B(\tau^- \rightarrow K^- \pi^- K^+ \nu_\tau) = (0.155 \pm 0.006 \pm 0.009)\%$ from BRIERE 03. | | | |
| 47 From a comparison to ALAM 94 assuming purely resonant production of the $K^- K^{*0}$ system. | | | |
| 48 From a fit to the 3π mass spectrum including the $K\bar{K}^*(892)$ threshold. | | | |
| 49 Assuming $a_1(1260)$ dominance and taking $B(\tau \rightarrow a_1(1260)\nu_\tau)$ from BUSKULIC 96. | | | |
| 50 Uses multichannel Aitchison-Bowler model (BOWLER 75). Uses data from GAVILLET 77, DAUM 80, and DANKOWYCH 81. | | | |
| 51 Inconsistent with observations of $\sigma\pi$, $f_0(1370)\pi$, and $f_2(1270)\pi$ decay modes. | | | |

$a_1(1260)$ REFERENCES

| | | | | |
|--------------|------|----------------|-------------------------------------|-----------------------------|
| ALEKSEEV | 10 | PRL 104 241803 | M.G. Alekseev <i>et al.</i> | (COMPASS Collab.) |
| AUBERT | 07AU | PR D76 092005 | B. Aubert <i>et al.</i> | (BABAR Collab.) |
| LINK | 07A | PR D75 052003 | J.M. Link <i>et al.</i> | (FNAL FOCUS Collab.) |
| PDG | 06 | JPG 33 1 | W.-M. Yao <i>et al.</i> | (PDG Collab.) |
| COAN | 04 | PRL 92 232001 | T.E. Coan <i>et al.</i> | (CLEO Collab.) |
| GOMEZ-DUM... | 04 | PR D69 073002 | D. Gomez Dumm, A. Pich, J. Portoles | |
| SALVINI | 04 | EPJ C35 21 | P. Salvini <i>et al.</i> | (OBELIX Collab.) |
| BRIERE | 03 | PRL 90 181802 | R. A. Briere <i>et al.</i> | (CLEO Collab.) |
| CHUNG | 02 | PR D65 072001 | S.U. Chung <i>et al.</i> | (BNL E852 Collab.) |
| DRUTSKOY | 02 | PL B542 171 | A. Drutskey <i>et al.</i> | (BELLE Collab.) |
| BARBERIS | 01 | PL B507 14 | D. Barberis <i>et al.</i> | |
| ASNER | 00 | PR D61 012002 | D.M. Asner <i>et al.</i> | (CLEO Collab.) |
| AKHMETSHIN | 99E | PL B466 392 | R.R. Akhmetshin <i>et al.</i> | (Novosibirsk CMD-2 Collab.) |
| BARATE | 99R | EPJ C11 599 | R. Barate <i>et al.</i> | (ALEPH Collab.) |
| BONDAR | 99 | PL B466 403 | A.E. Bondar <i>et al.</i> | (Novosibirsk CMD-2 Collab.) |

| | | | | |
|------------|-----|---------------------------------------------|----------------------------------------|------------------------------|
| ABREU | 98G | PL B426 411 | P. Abreu <i>et al.</i> | (DELPHI Collab.) |
| BARATE | 98R | EPJ C4 409 | R. Barate <i>et al.</i> | (ALEPH Collab.) |
| BARBERIS | 98B | PL B422 399 | D. Barberis <i>et al.</i> | (WA 102 Collab.) |
| ACKERSTAFF | 97R | ZPHY C75 593 | K. Akerstaff <i>et al.</i> | (OPAL Collab.) |
| BUSKULIC | 96 | ZPHY C70 579 | D. Buskulic <i>et al.</i> | (ALEPH Collab.) |
| AKERS | 95P | ZPHY C67 45 | R. Akers <i>et al.</i> | (OPAL Collab.) |
| ALAM | 94 | PR D50 43 | M.S. Alam <i>et al.</i> | (CLEO Collab.) |
| ALBRECHT | 93C | ZPHY C58 61 | H. Albrecht <i>et al.</i> | (ARGUS Collab.) |
| DECKER | 93A | ZPHY C58 445 | R. Decker <i>et al.</i> | |
| ANDO | 92 | PL B291 496 | A. Ando <i>et al.</i> | (KEK, KYOT, NIRS, SAGA+) |
| KUHN | 92 | ZPHY C56 661 | J.H. Kuhn, E. Mirkes | |
| IVANOV | 91 | ZPHY C49 563 | Y.P. Ivanov, A.A. Osipov, M.K. Volkov | (JINR) |
| ARMSTRONG | 90 | ZPHY C48 213 | T.A. Armstrong, M. Benayoun, W. Beusch | (WA76 Coll.) |
| FEINDT | 90 | ZPHY C48 681 | M. Feindt | (HAMB) |
| KUHN | 90 | ZPHY C48 445 | J.H. Kuhn <i>et al.</i> | (MPIM) |
| ISGUR | 89 | PR D39 1357 | N. Isgur, C. Morningstar, C. Reader | (TNTO) |
| BOWLER | 88 | PL B209 99 | M.G. Bowler | (OXF) |
| BAND | 87 | PL B198 297 | H.R. Band <i>et al.</i> | (MAC Collab.) |
| TORNQVIST | 87 | ZPHY C36 695 | N.A. Tornqvist | (HELS) |
| ALBRECHT | 86B | ZPHY C33 7 | H. Albrecht <i>et al.</i> | (ARGUS Collab.) |
| RUCKSTUHL | 86 | PRL 56 2132 | W. Ruckstuhl <i>et al.</i> | (DELCO Collab.) |
| SCHMIDKE | 86 | PRL 57 527 | W.B. Schmidke <i>et al.</i> | (Mark II Collab.) |
| BELLINI | 85 | SJNP 41 781 | D. Bellini <i>et al.</i> | |
| ZIELINSKI | 84C | Translated from YAF 41 1223. PRL 52 1195 | M. Zielinski <i>et al.</i> | (ROCH, MINN, FNAL) |
| LONGACRE | 82 | PR D26 82 | R.S. Longacre | (BNL) |
| DANKOWY... | 81 | PRL 46 580 | J.A. Dankowych <i>et al.</i> | (TNTO, BNL, CARL+) |
| DAUM | 81B | NP B182 269 | C. Daum <i>et al.</i> | (AMST, CERN, CRAC, MPIM+) |
| DAUM | 80 | PL 89B 281 | C. Daum <i>et al.</i> | (AMST, CERN, CRAC, MPIM+) JP |
| GAVILLET | 77 | PL 69B 119 | P. Gavillet <i>et al.</i> | (AMST, CERN, NIJM+) JP |
| BOWLER | 75 | NP B97 227 | M.G. Bowler <i>et al.</i> | (OXFTP, DARE) |