

# K\*(892)

$$I(J^P) = \frac{1}{2}(1^-)$$

## K\*(892) MASS

### CHARGED ONLY, HADROPRODUCED

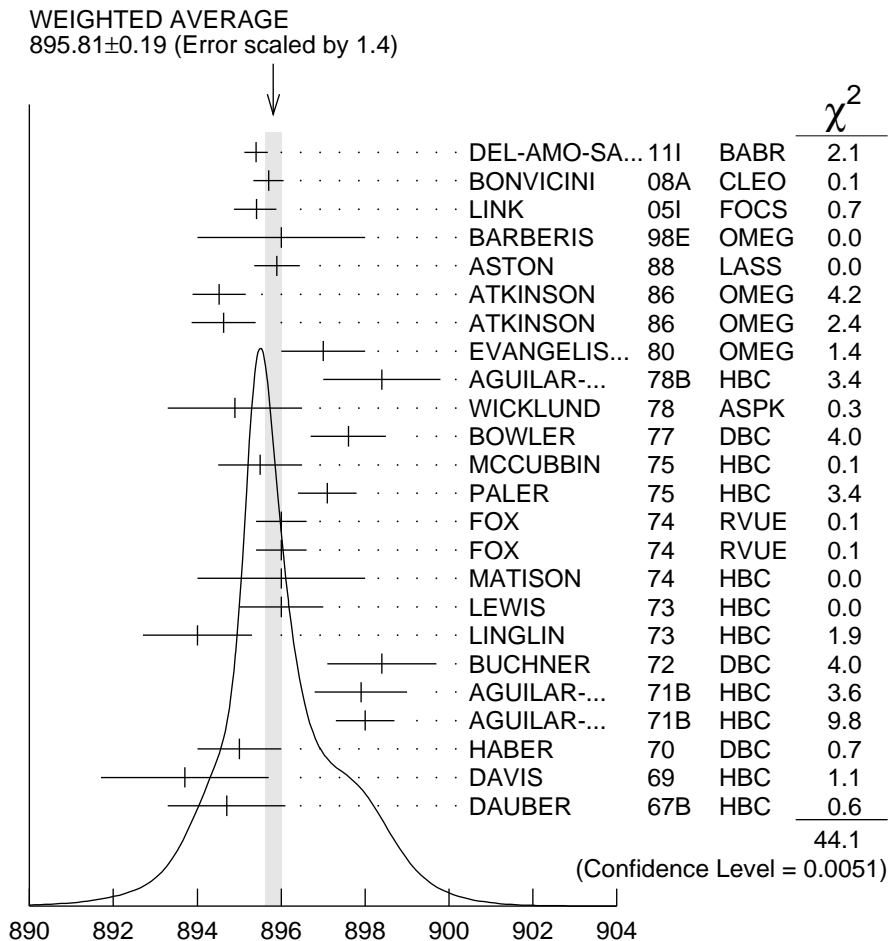
| VALUE (MeV)   | EVTS      | DOCUMENT ID                | TECN | CHG | COMMENT  |
|---|-----------|----------------------------|------|-----|--|
| <b>891.66 ± 0.26 OUR AVERAGE</b>  |           |                            |      |     |  |
| 892.6 ± 0.5   | 5840      | BAUBILLIER 84B             | HBC  | -   | 8.25 $K^- p \rightarrow \bar{K}^0 \pi^- p$       |
| 888 ± 3   |           | NAPIER 84                  | SPEC | +   | 200 $\pi^- p \rightarrow 2K_S^0 X$               |
| 891 ± 1   |           | NAPIER 84                  | SPEC | -   | 200 $\pi^- p \rightarrow 2K_S^0 X$               |
| 891.7 ± 2.1   | 3700      | BARTH 83                   | HBC  | +   | 70 $K^+ p \rightarrow K^0 \pi^+ X$               |
| 891 ± 1   | 4100      | TOAFF 81                   | HBC  | -   | 6.5 $K^- p \rightarrow \bar{K}^0 \pi^- p$        |
| 892.8 ± 1.6   |           | AJINENKO 80                | HBC  | +   | 32 $K^+ p \rightarrow K^0 \pi^+ X$               |
| 890.7 ± 0.9   | 1800      | AGUILAR-... 78B            | HBC  | ±   | 0.76 $\bar{p} p \rightarrow K^\mp K_S^0 \pi^\pm$ |
| 886.6 ± 2.4   | 1225      | BALAND 78                  | HBC  | ±   | 12 $\bar{p} p \rightarrow (K\pi)^\pm X$          |
| 891.7 ± 0.6   | 6706      | COOPER 78                  | HBC  | ±   | 0.76 $\bar{p} p \rightarrow (K\pi)^\pm X$        |
| 891.9 ± 0.7   | 9000      | <sup>1</sup> PALER 75      | HBC  | -   | 14.3 $K^- p \rightarrow (K\pi)^-$<br>X           |
| 892.2 ± 1.5   | 4404      | AGUILAR-... 71B            | HBC  | -   | 3.9,4.6 $K^- p \rightarrow$<br>$(K\pi)^- p$      |
| 891 ± 2   | 1000      | CRENNELL 69D               | DBC  | -   | 3.9 $K^- N \rightarrow K^0 \pi^- X$              |
| 890 ± 3.0   | 720       | BARLOW 67                  | HBC  | ±   | 1.2 $\bar{p} p \rightarrow (K^0 \pi)^\pm K^\mp$  |
| 889 ± 3.0   | 600       | BARLOW 67                  | HBC  | ±   | 1.2 $\bar{p} p \rightarrow (K^0 \pi)^\pm K\pi$   |
| 891 ± 2.3   | 620       | <sup>2</sup> DEBAERE 67B   | HBC  | +   | 3.5 $K^+ p \rightarrow K^0 \pi^+ p$              |
| 891.0 ± 1.2   | 1700      | <sup>3</sup> WOJCICKI 64   | HBC  | -   | 1.7 $K^- p \rightarrow \bar{K}^0 \pi^- p$        |
| ● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ● |           |                            |      |     |  |
| 893.5 ± 1.1   | 27k       | <sup>4</sup> ABELE 99D     | CBAR | ±   | 0.0 $\bar{p} p \rightarrow K^+ K^- \pi^0$        |
| 890.4 ± 0.2 ± 0.5   | 80 ± 0.8k | <sup>5</sup> BIRD 89       | LASS | -   | 11 $K^- p \rightarrow \bar{K}^0 \pi^- p$         |
| 890.0 ± 2.3   | 800       | <sup>2,3</sup> CLELAND 82  | SPEC | +   | 30 $K^+ p \rightarrow K_S^0 \pi^+ p$             |
| 896.0 ± 1.1   | 3200      | <sup>2,3</sup> CLELAND 82  | SPEC | +   | 50 $K^+ p \rightarrow K_S^0 \pi^+ p$             |
| 893 ± 1   | 3600      | <sup>2,3</sup> CLELAND 82  | SPEC | -   | 50 $K^+ p \rightarrow K_S^0 \pi^- p$             |
| 896.0 ± 1.9   | 380       | DELFOSE 81                 | SPEC | +   | 50 $K^\pm p \rightarrow K^\pm \pi^0 p$           |
| 886.0 ± 2.3   | 187       | DELFOSE 81                 | SPEC | -   | 50 $K^\pm p \rightarrow K^\pm \pi^0 p$           |
| 894.2 ± 2.0   | 765       | <sup>2</sup> CLARK 73      | HBC  | -   | 3.13 $K^- p \rightarrow \bar{K}^0 \pi^- p$       |
| 894.3 ± 1.5   | 1150      | <sup>2,3</sup> CLARK 73    | HBC  | -   | 3.3 $K^- p \rightarrow \bar{K}^0 \pi^- p$        |
| 892.0 ± 2.6   | 341       | <sup>2</sup> SCHWEING...68 | HBC  | -   | 5.5 $K^- p \rightarrow \bar{K}^0 \pi^- p$        |

### CHARGED ONLY, PRODUCED IN $\tau$ LEPTON DECAYS

| VALUE (MeV)   | EVTS  | DOCUMENT ID                | TECN | COMMENT                                   |
|---|-------|----------------------------|------|---|
| <b>895.47 ± 0.20 ± 0.74</b>   |       |                            |      |   |
|   | 53k   | <sup>6</sup> EPIFANOV 07   | BELL | $\tau^- \rightarrow K_S^0 \pi^- \nu_\tau$ |
| ● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ● |       |                            |      |   |
| 892.0 ± 0.5   |       | <sup>7</sup> BOITO 10      | RVUE | $\tau^- \rightarrow K_S^0 \pi^- \nu_\tau$ |
| 892.0 ± 0.9   |       | <sup>8,9</sup> BOITO 09    | RVUE | $\tau^- \rightarrow K_S^0 \pi^- \nu_\tau$ |
| 895.3 ± 0.2   |       | <sup>8,10</sup> JAMIN 08   | RVUE | $\tau^- \rightarrow K_S^0 \pi^- \nu_\tau$ |
| 896.4 ± 0.9   | 11970 | <sup>11</sup> BONVICINI 02 | CLEO | $\tau^- \rightarrow K^- \pi^0 \nu_\tau$   |
| 895 ± 2   |       | <sup>12</sup> BARATE 99R   | ALEP | $\tau^- \rightarrow K^- \pi^0 \nu_\tau$   |

### NEUTRAL ONLY

| VALUE (MeV)   | EVTS  | DOCUMENT ID   | TECN      | COMMENT   |
|---|-------|---|-----------|---|
| <b>895.81 ± 0.19 OUR AVERAGE</b>  |       | Error includes scale factor of 1.4. See the ideogram below. |           |   |
| 895.4 ± 0.2 ± 0.2   | 243k  | <sup>13</sup> DEL-AMO-SA..11I                               | BABR      | $D^+ \rightarrow K^- \pi^+ e^+ \nu_e$                       |
| 895.7 ± 0.2 ± 0.3   | 141k  | <sup>14</sup> BONVICINI                                     | 08A CLEO  | $D^+ \rightarrow K^- \pi^+ \pi^+$                           |
| 895.41 ± 0.32 <sup>+0.35</sup> <sub>-0.43</sub>                               | 18k   | <sup>15</sup> LINK  | 05I FOCS  | $D^+ \rightarrow K^- \pi^+ \mu^+ \nu_\mu$                   |
| 896 ± 2   |       | BARBERIS  | 98E OMEG  | 450 $pp \rightarrow p_f p_s K^* \bar{K}^*$                  |
| 895.9 ± 0.5 ± 0.2   |       | ASTON   | 88 LASS   | 11 $K^- p \rightarrow K^- \pi^+ n$                          |
| 894.52 ± 0.63   | 25k   | <sup>1</sup> ATKINSON                                       | 86 OMEG   | 20-70 $\gamma p$  |
| 894.63 ± 0.76   | 20k   | <sup>1</sup> ATKINSON                                       | 86 OMEG   | 20-70 $\gamma p$  |
| 897 ± 1   | 28k   | EVANGELIS...  | 80 OMEG   | 10 $\pi^- p \rightarrow K^+ \pi^- (\Lambda, \Sigma)$        |
| 898.4 ± 1.4   | 1180  | AGUILAR-...   | 78B HBC   | 0.76 $\bar{p} p \rightarrow K^\mp K_S^0 \pi^\pm$            |
| 894.9 ± 1.6   |       | WICKLUND  | 78 ASPK   | 3,4,6 $K^\pm N \rightarrow (K\pi)^0 N$                      |
| 897.6 ± 0.9   |       | BOWLER  | 77 DBC    | 5.4 $K^+ d \rightarrow K^+ \pi^- pp$                        |
| 895.5 ± 1.0   | 3600  | MCCUBBIN  | 75 HBC    | 3.6 $K^- p \rightarrow K^- \pi^+ n$                         |
| 897.1 ± 0.7   | 22k   | <sup>1</sup> PALER  | 75 HBC    | 14.3 $K^- p \rightarrow (K\pi)^0 X$                         |
| 896.0 ± 0.6   | 10k   | FOX   | 74 RVUE   | 2 $K^- p \rightarrow K^- \pi^+ n$                           |
| 896.0 ± 0.6   |       | FOX   | 74 RVUE   | 2 $K^+ n \rightarrow K^+ \pi^- p$                           |
| 896 ± 2   |       | <sup>16</sup> MATISON                                       | 74 HBC    | 12 $K^+ p \rightarrow K^+ \pi^- \Delta$                     |
| 896 ± 1   | 3186  | LEWIS   | 73 HBC    | 2.1-2.7 $K^+ p \rightarrow K \pi \pi p$                     |
| 894.0 ± 1.3   |       | <sup>16</sup> LINGLIN                                       | 73 HBC    | 2-13 $K^+ p \rightarrow$<br>$K^+ \pi^- \pi^+ p$             |
| 898.4 ± 1.3   | 1700  | <sup>2</sup> BUCHNER  | 72 DBC    | 4.6 $K^+ n \rightarrow K^+ \pi^- p$                         |
| 897.9 ± 1.1   | 2934  | <sup>2</sup> AGUILAR-...                                    | 71B HBC   | 3.9,4.6 $K^- p \rightarrow K^- \pi^+ n$                     |
| 898.0 ± 0.7   | 5362  | <sup>2</sup> AGUILAR-...                                    | 71B HBC   | 3.9,4.6 $K^- p \rightarrow$<br>$K^- \pi^+ \pi^- p$          |
| 895 ± 1   | 4300  | <sup>3</sup> HABER  | 70 DBC    | 3 $K^- N \rightarrow K^- \pi^+ X$                           |
| 893.7 ± 2.0   | 10k   | DAVIS   | 69 HBC    | 12 $K^+ p \rightarrow K^+ \pi^- \pi^+ p$                    |
| 894.7 ± 1.4   | 1040  | <sup>2</sup> DAUBER   | 67B HBC   | 2.0 $K^- p \rightarrow K^- \pi^+ \pi^- p$                   |
| ● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ● |       |   |           |   |
| 894.9 ± 0.5 ± 0.7   | 14.4k | <sup>17</sup> MITCHELL                                      | 09A CLEO  | $D_s^+ \rightarrow K^+ K^- \pi^+$                           |
| 896.2 ± 0.3   | 20k   | <sup>8</sup> AUBERT   | 07AK BABR | 10.6 $e^+ e^- \rightarrow$<br>$K^{*0} K^\pm \pi^\mp \gamma$ |
| 900.7 ± 1.1   | 5900  | BARTH   | 83 HBC    | 70 $K^+ p \rightarrow K^+ \pi^- X$                          |



$K^*(892)^0$  mass (MeV)

- 1 Inclusive reaction. Complicated background and phase-space effects.
- 2 Mass errors enlarged by us to  $\Gamma/\sqrt{N}$ . See note.
- 3 Number of events in peak reevaluated by us.
- 4 K-matrix pole.
- 5 From a partial wave amplitude analysis.
- 6 From a fit in the  $K_0^*(800) + K^*(892) + K^*(1410)$  model.
- 7 From the pole position of the  $K\pi$  vector form factor using EPIFANOV 07 and constraints from  $K_{J3}$  decays in ANTONELLI 10.
- 8 Systematic uncertainties not estimated.
- 9 From the pole position of the  $K\pi$  vector form factor in the complex  $s$ -plane and using EPIFANOV 07 data.
- 10 Reanalysis of EPIFANOV 07 using resonance chiral theory.
- 11 Calculated by us from the shift by  $4.7 \pm 0.9$  MeV (statistical uncertainty only) reported in BONVICINI 02 with respect to the world average value from PDG 00.
- 12 With mass and width of the  $K^*(1410)$  fixed at 1412 MeV and 227 MeV, respectively.
- 13 Taking into account the  $K^*(892)^0$ ,  $S$ -wave and  $P$ -wave ( $K^*(1410)^0$ ).
- 14 From the isobar model with a complex pole for the  $\kappa$ .
- 15 Fit to  $K\pi$  mass spectrum includes a non-resonant scalar component.
- 16 From pole extrapolation.
- 17 This value comes from a fit with  $\chi^2$  of 178/117.

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### $m_{K^*(892)^0} - m_{K^*(892)^\pm}$

| VALUE (MeV)                | EVTS | DOCUMENT ID          | TECN | CHG | COMMENT  |
|----------------------------|------|----------------------|------|-----|--|
| <b>6.7±1.2 OUR AVERAGE</b> |      |                      |      |     |  |
| 7.7±1.7                    | 2980 | AGUILAR-...          | 78B  | HBC | ±0 0.76 $\bar{p}p \rightarrow K^\mp K_S^0 \pi^\pm$ |
| 5.7±1.7                    | 7338 | AGUILAR-...          | 71B  | HBC | -0 3.9,4.6 $K^- p$                                 |
| 6.3±4.1                    | 283  | <sup>18</sup> BARASH | 67B  | HBC | 0.0 $\bar{p}p$                                     |

<sup>18</sup> Number of events in peak reevaluated by us.

### $K^*(892)$ RANGE PARAMETER

All from partial wave amplitude analyses.

| VALUE (GeV <sup>-1</sup> )  | EVTS | DOCUMENT ID                  | TECN | CHG  | COMMENT                                     |
|---|------|------------------------------|------|------|---|
| 2.1 ±0.5 ±0.5   | 243k | <sup>19</sup> DEL-AMO-SA.11l | BABR | 0    | $D^+ \rightarrow K^- \pi^+ e^+ \nu_e$       |
| 3.96±0.54 <sup>+1.31</sup> <sub>-0.90</sub>                                   | 18k  | <sup>20</sup> LINK           | 05l  | FOCS | 0 $D^+ \rightarrow K^- \pi^+ \mu^+ \nu_\mu$ |
| 3.4 ±0.7  |      | ASTON                        | 88   | LASS | 0 11 $K^- p \rightarrow K^- \pi^+ n$        |
| • • • We do not use the following data for averages, fits, limits, etc. • • • |      |                              |      |      |   |
| 12.1 ±3.2 ±3.0  |      | BIRD                         | 89   | LASS | - 11 $K^- p \rightarrow \bar{K}^0 \pi^- p$  |

<sup>19</sup> Taking into account the  $K^*(892)^0$ ,  $S$ -wave and  $P$ -wave ( $K^*(1410)^0$ ).

<sup>20</sup> Fit to  $K\pi$  mass spectrum includes a non-resonant scalar component.

### $K^*(892)$ WIDTH

#### CHARGED ONLY, HADROPRODUCED

| VALUE (MeV)                 | EVTS | DOCUMENT ID               | TECN | CHG  | COMMENT   |
|-----------------------------|------|---------------------------|------|------|---|
| <b>50.8±0.9 OUR FIT</b>     |      |                           |      |      |   |
| <b>50.8±0.9 OUR AVERAGE</b> |      |                           |      |      |   |
| 49 ±2                       | 5840 | BAUBILLIER                | 84B  | HBC  | - 8.25 $K^- p \rightarrow \bar{K}^0 \pi^- p$      |
| 56 ±4                       |      | NAPIER                    | 84   | SPEC | - 200 $\pi^- p \rightarrow 2K_S^0 X$              |
| 51 ±2                       | 4100 | TOAFF                     | 81   | HBC  | - 6.5 $K^- p \rightarrow \bar{K}^0 \pi^- p$       |
| 50.5±5.6                    |      | AJINENKO                  | 80   | HBC  | + 32 $K^+ p \rightarrow K^0 \pi^+ X$              |
| 45.8±3.6                    | 1800 | AGUILAR-...               | 78B  | HBC  | ± 0.76 $\bar{p}p \rightarrow K^\mp K_S^0 \pi^\pm$ |
| 52.0±2.5                    | 6706 | <sup>21</sup> COOPER      | 78   | HBC  | ± 0.76 $\bar{p}p \rightarrow (K\pi)^\pm X$        |
| 52.1±2.2                    | 9000 | <sup>22</sup> PALER       | 75   | HBC  | - 14.3 $K^- p \rightarrow (K\pi)^- X$             |
| 46.3±6.7                    | 765  | <sup>21</sup> CLARK       | 73   | HBC  | - 3.13 $K^- p \rightarrow \bar{K}^0 \pi^- p$      |
| 48.2±5.7                    | 1150 | <sup>21,23</sup> CLARK    | 73   | HBC  | - 3.3 $K^- p \rightarrow \bar{K}^0 \pi^- p$       |
| 54.3±3.3                    | 4404 | <sup>21</sup> AGUILAR-... | 71B  | HBC  | - 3.9,4.6 $K^- p \rightarrow (K\pi)^- p$          |
| 46 ±5                       | 1700 | <sup>21,23</sup> WOJCICKI | 64   | HBC  | - 1.7 $K^- p \rightarrow \bar{K}^0 \pi^- p$       |

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

|           |           |                          |     |      |   |     |                                    |
|-----------|-----------|--------------------------|-----|------|---|-----|------------------------------------|
| 54.8±1.7  | 27k       | <sup>24</sup> ABELE      | 99D | CBAR | ± | 0.0 | $\bar{p}p \rightarrow K^+K^-\pi^0$ |
| 45.2±1 ±2 | 79.7±0.8k | <sup>25</sup> BIRD       | 89  | LASS | − | 11  | $K^-p \rightarrow \bar{K}^0\pi^-p$ |
| 42.8±7.1  | 3700      | BARTH                    | 83  | HBC  | + | 70  | $K^+p \rightarrow K^0\pi^+X$       |
| 64.0±9.2  | 800       | <sup>21,23</sup> CLELAND | 82  | SPEC | + | 30  | $K^+p \rightarrow K_S^0\pi^+p$     |
| 62.0±4.4  | 3200      | <sup>21,23</sup> CLELAND | 82  | SPEC | + | 50  | $K^+p \rightarrow K_S^0\pi^+p$     |
| 55 ±4     | 3600      | <sup>21,23</sup> CLELAND | 82  | SPEC | − | 50  | $K^+p \rightarrow K_S^0\pi^-p$     |
| 62.6±3.8  | 380       | DELFOSE                  | 81  | SPEC | + | 50  | $K^\pm p \rightarrow K^\pm\pi^0p$  |
| 50.5±3.9  | 187       | DELFOSE                  | 81  | SPEC | − | 50  | $K^\pm p \rightarrow K^\pm\pi^0p$  |

### CHARGED ONLY, PRODUCED IN $\tau$ LEPTON DECAYS

| VALUE (MeV)         | EVTS | DOCUMENT ID            | TECN | COMMENT                                      |
|---------------------|------|------------------------|------|--|
| <b>46.2±0.6±1.2</b> | 53k  | <sup>26</sup> EPIFANOV | 07   | BELL $\tau^- \rightarrow K_S^0\pi^-\nu_\tau$ |

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

|          |  |                        |     |  |
|----------|--|------------------------|-----|--|
| 46.5±1.1 |  | <sup>27</sup> BOITO    | 10  | RVUE $\tau^- \rightarrow K_S^0\pi^-\nu_\tau$ |
| 46.2±0.4 |  | <sup>28,29</sup> BOITO | 09  | RVUE $\tau^- \rightarrow K_S^0\pi^-\nu_\tau$ |
| 47.5±0.4 |  | <sup>28,30</sup> JAMIN | 08  | RVUE $\tau^- \rightarrow K_S^0\pi^-\nu_\tau$ |
| 55 ±8    |  | <sup>31</sup> BARATE   | 99R | ALEP $\tau^- \rightarrow K^-\pi^0\nu_\tau$   |

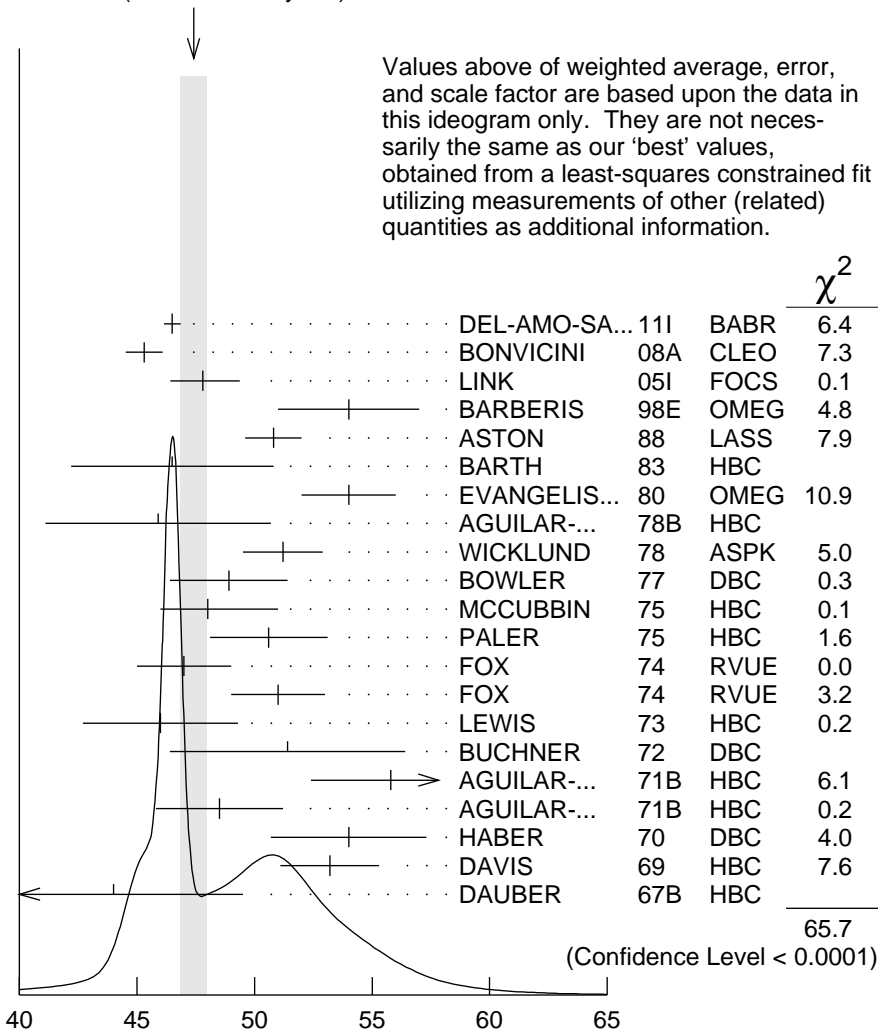
### NEUTRAL ONLY

| VALUE (MeV)                                  | EVTS  | DOCUMENT ID   | TECN | COMMENT  |
|--|-------|---|------|--|
| <b>47.4 ±0.6 OUR FIT</b>                     | Error | includes scale factor of 2.2.                         |      |  |
| <b>47.4 ±0.6 OUR AVERAGE</b>                 | Error | includes scale factor of 2.0. See the ideogram below. |      |  |
| 46.5 ±0.3 ±0.2                               | 243k  | <sup>32</sup> DEL-AMO-SA..11I                         | BABR | $D^+ \rightarrow K^-\pi^+e^+\nu_e$                     |
| 45.3 ±0.5 ±0.6                               | 141k  | <sup>33</sup> BONVICINI                               | 08A  | CLEO $D^+ \rightarrow K^-\pi^+\pi^+$                   |
| 47.79±0.86 <sup>+1.32</sup> <sub>−1.06</sub> | 18k   | <sup>34</sup> LINK                                    | 05I  | FOCS $D^+ \rightarrow K^-\pi^+\mu^+\nu_\mu$            |
| 54 ±3  |       | BARBERIS  | 98E  | OMEG 450 $pp \rightarrow p_f p_s K^* \bar{K}^*$        |
| 50.8 ±0.8 ±0.9                               |       | ASTON   | 88   | LASS 11 $K^-p \rightarrow K^-\pi^+n$                   |
| 46.5 ±4.3                                    | 5900  | BARTH   | 83   | HBC 70 $K^+p \rightarrow K^+\pi^-X$                    |
| 54 ±2  | 28k   | EVANGELIS...  | 80   | OMEG 10 $\pi^-p \rightarrow K^+\pi^-(\Lambda, \Sigma)$ |
| 45.9 ±4.8                                    | 1180  | AGUILAR-...   | 78B  | HBC 0.76 $\bar{p}p \rightarrow K^\mp K_S^0\pi^\pm$     |
| 51.2 ±1.7                                    |       | WICKLUND  | 78   | ASPK 3,4,6 $K^\pm N \rightarrow (K\pi)^0 N$            |
| 48.9 ±2.5                                    |       | BOWLER  | 77   | DBC 5.4 $K^+d \rightarrow K^+\pi^-pp$                  |
| 48 <sup>+3</sup> <sub>−2</sub>               | 3600  | MCCUBBIN  | 75   | HBC 3.6 $K^-p \rightarrow K^-\pi^+n$                   |
| 50.6 ±2.5                                    | 22k   | <sup>22</sup> PALER                                   | 75   | HBC 14.3 $K^-p \rightarrow (K\pi)^0 X$                 |
| 47 ±2  | 10k   | FOX   | 74   | RVUE 2 $K^-p \rightarrow K^-\pi^+n$                    |
| 51 ±2  |       | FOX   | 74   | RVUE 2 $K^+n \rightarrow K^+\pi^-p$                    |
| 46.0 ±3.3                                    | 3186  | <sup>21</sup> LEWIS                                   | 73   | HBC 2.1–2.7 $K^+p \rightarrow K\pi\pi p$               |
| 51.4 ±5.0                                    | 1700  | <sup>21</sup> BUCHNER                                 | 72   | DBC 4.6 $K^+n \rightarrow K^+\pi^-p$                   |
| 55.8 <sup>+4.2</sup> <sub>−3.4</sub>         | 2934  | <sup>21</sup> AGUILAR-...                             | 71B  | HBC 3.9,4.6 $K^-p \rightarrow K^-\pi^+n$               |
| 48.5 ±2.7                                    | 5362  | AGUILAR-...   | 71B  | HBC 3.9,4.6 $K^-p \rightarrow K^-\pi^+\pi^-p$          |
| 54.0 ±3.3                                    | 4300  | <sup>21,23</sup> HABER                                | 70   | DBC 3 $K^-N \rightarrow K^-\pi^+X$                     |
| 53.2 ±2.1                                    | 10k   | <sup>21</sup> DAVIS                                   | 69   | HBC 12 $K^+p \rightarrow K^+\pi^-\pi^+p$               |
| 44 ±5.5                                      | 1040  | <sup>21</sup> DAUBER                                  | 67B  | HBC 2.0 $K^-p \rightarrow K^-\pi^+\pi^-p$              |

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

45.7 ±1.1 ±0.5    14.4k    35 MITCHELL    09A CLEO     $D_s^+ \rightarrow K^+ K^- \pi^+$   
 50.6 ±0.9        20k    28 AUBERT    07AK BABR     $10.6 e^+ e^- \rightarrow K^{*0} K^\pm \pi^\mp \gamma$

WEIGHTED AVERAGE  
 47.4±0.6 (Error scaled by 2.0)



NEUTRAL ONLY (MeV)

- 21 Width errors enlarged by us to  $4 \times \Gamma/\sqrt{N}$ ; see note.
- 22 Inclusive reaction. Complicated background and phase-space effects.
- 23 Number of events in peak reevaluated by us.
- 24 K-matrix pole.
- 25 From a partial wave amplitude analysis.
- 26 From a fit in the  $K_0^*(800) + K^*(892) + K^*(1410)$  model.
- 27 From the pole position of the  $K\pi$  vector form factor using EPIFANOV 07 and constraints from  $K_{J3}$  decays in ANTONELLI 10.
- 28 Systematic uncertainties not estimated.
- 29 From the pole position of the  $K\pi$  vector form factor in the complex  $s$ -plane and using EPIFANOV 07 data.
- 30 Reanalysis of EPIFANOV 07 using resonance chiral theory.

<sup>31</sup> With mass and width of the  $K^*(1410)$  fixed at 1412 MeV and 227 MeV, respectively.

<sup>32</sup> Taking into account the  $K^*(892)^0$ ,  $S$ -wave and  $P$ -wave ( $K^*(1410)^0$ ).

<sup>33</sup> From the isobar model with a complex pole for the  $\kappa$ .

<sup>34</sup> Fit to  $K\pi$  mass spectrum includes a non-resonant scalar component.

<sup>35</sup> This value comes from a fit with  $\chi^2$  of 178/117.

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### $K^*(892)$ DECAY MODES

|            | Mode          | Fraction ( $\Gamma_i/\Gamma$ )   | Confidence level     |
|------------|---------------|----------------------------------|----------------------|
| $\Gamma_1$ | $K\pi$        | $\sim 100$                       | %                    |
| $\Gamma_2$ | $(K\pi)^\pm$  | $(99.901 \pm 0.009)$             | %                    |
| $\Gamma_3$ | $(K\pi)^0$    | $(99.754 \pm 0.021)$             | %                    |
| $\Gamma_4$ | $K^0\gamma$   | $(2.46 \pm 0.21) \times 10^{-3}$ |                      |
| $\Gamma_5$ | $K^\pm\gamma$ | $(9.9 \pm 0.9) \times 10^{-4}$   |                      |
| $\Gamma_6$ | $K\pi\pi$     | $< 7$                            | $\times 10^{-4}$ 95% |

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### CONSTRAINED FIT INFORMATION

An overall fit to the total width and a partial width uses 13 measurements and one constraint to determine 3 parameters. The overall fit has a  $\chi^2 = 7.8$  for 11 degrees of freedom.

The following *off-diagonal* array elements are the correlation coefficients  $\langle \delta p_i \delta p_j \rangle / (\delta p_i \cdot \delta p_j)$ , in percent, from the fit to parameters  $p_i$ , including the branching fractions,  $x_i \equiv \Gamma_i / \Gamma_{\text{total}}$ . The fit constrains the  $x_i$  whose labels appear in this array to sum to one.

$$\begin{array}{c}
 x_5 \\
 \Gamma
 \end{array}
 \begin{array}{|c}
 -100 \\
 \hline
 19 \quad -19 \\
 \hline
 x_2 \quad x_5
 \end{array}$$

|            | Mode           | Rate (MeV)        |
|------------|----------------|-------------------|
| $\Gamma_2$ | $(K\pi)^\pm$   | $50.7 \pm 0.9$    |
| $\Gamma_5$ | $K^\pm \gamma$ | $0.050 \pm 0.005$ |

### CONSTRAINED FIT INFORMATION

An overall fit to the total width and a partial width uses 22 measurements and one constraint to determine 3 parameters. The overall fit has a  $\chi^2 = 66.8$  for 20 degrees of freedom.

The following *off-diagonal* array elements are the correlation coefficients  $\langle \delta p_i \delta p_j \rangle / (\delta p_i \cdot \delta p_j)$ , in percent, from the fit to parameters  $p_i$ , including the branching fractions,  $x_i \equiv \Gamma_i / \Gamma_{\text{total}}$ . The fit constrains the  $x_i$  whose labels appear in this array to sum to one.

$$\begin{array}{c}
 x_4 \\
 \Gamma
 \end{array}
 \begin{array}{|c}
 -100 \\
 \hline
 15 \quad -15 \\
 \hline
 x_3 \quad x_4
 \end{array}$$

|            | Mode         | Rate (MeV)        | Scale factor |
|------------|--------------|-------------------|--------------|
| $\Gamma_3$ | $(K\pi)^0$   | $47.3 \pm 0.6$    | 2.1          |
| $\Gamma_4$ | $K^0 \gamma$ | $0.116 \pm 0.010$ |              |

### $K^*(892)$ PARTIAL WIDTHS

| $\Gamma(K^0 \gamma)$ |                |             |      |      |         | $\Gamma_4$                          |
|----------------------|----------------|-------------|------|------|---------|-------------------------------------|
| VALUE (keV)          | EVTS           | DOCUMENT ID | TECN | CHG  | COMMENT |                                     |
| <b>116 ± 10</b>      | <b>OUR FIT</b> |             |      |      |         |                                     |
| <b>116.5 ± 9.9</b>   | 584            | CARLSMITH   | 86   | SPEC | 0       | $K_L^0 A \rightarrow K_S^0 \pi^0 A$ |



$\Gamma(K^\pm \gamma)$  $\Gamma_5$ 

| VALUE (keV)               | DOCUMENT ID | TECN | CHG    | COMMENT                               |
|---------------------------|-------------|------|--------|---------------------------------------|
| <b>50 ± 5 OUR FIT</b>     |             |      |        |                                       |
| <b>50 ± 5 OUR AVERAGE</b> |             |      |        |                                       |
| 48 ± 11                   | BERG        | 83   | SPEC - | 156 $K^- A \rightarrow \bar{K} \pi A$ |
| 51 ± 5                    | CHANDLEE    | 83   | SPEC + | 200 $K^+ A \rightarrow K \pi A$       |

 $K^*(892)$  BRANCHING RATIOS $\Gamma(K^0 \gamma)/\Gamma_{\text{total}}$  $\Gamma_4/\Gamma$ 

| VALUE (units $10^{-3}$ )  | DOCUMENT ID | TECN | CHG    | COMMENT            |
|---|-------------|------|--------|--------------------|
| <b>2.46 ± 0.21 OUR FIT</b>  |             |      |        |                    |
| • • • We do not use the following data for averages, fits, limits, etc. • • • |             |      |        |                    |
| 1.5 ± 0.7   | CARITHERS   | 75B  | CNTR 0 | 8–16 $\bar{K}^0 A$ |

 $\Gamma(K^\pm \gamma)/\Gamma_{\text{total}}$  $\Gamma_5/\Gamma$ 

| VALUE (units $10^{-3}$ )  | CL% | DOCUMENT ID | TECN | CHG    | COMMENT       |
|---|-----|-------------|------|--------|---------------|
| <b>0.99 ± 0.09 OUR FIT</b>  |     |             |      |        |               |
| • • • We do not use the following data for averages, fits, limits, etc. • • • |     |             |      |        |               |
| <1.6  | 95  | BEMPORAD    | 73   | CNTR + | 10–16 $K^+ A$ |

 $\Gamma(K \pi \pi)/\Gamma((K \pi)^\pm)$  $\Gamma_6/\Gamma_2$ 

| VALUE   | CL% | DOCUMENT ID | TECN | CHG   | COMMENT                                   |
|---|-----|-------------|------|-------|---|
| <b>&lt; 7 × 10<sup>-4</sup></b>   | 95  | JONGEJANS   | 78   | HBC   | 4 $K^- p \rightarrow p \bar{K}^0 2\pi$    |
| • • • We do not use the following data for averages, fits, limits, etc. • • • |     |             |      |       |   |
| < 20 × 10 <sup>-4</sup>   |     | WOJCICKI    | 64   | HBC - | 1.7 $K^- p \rightarrow \bar{K}^0 \pi^- p$ |

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