

$^{40}\text{Ca}(^{32}\text{S},\alpha 3\text{p}\gamma)$  2001We11

| Type            | Author   | History<br>Citation | Literature Cutoff Date |
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Adapted from the XUNDL dataset for 2001We11, compiled by G. Reed and B. Singh (McMaster) July 23, 2001.

2001We11: E=140 MeV  $^{32}\text{S}$  beam was produced from the Tandem XTU accelerator at the Legnaro National Laboratory. Target was a 0.4 mg/cm<sup>2</sup>  $^{40}\text{Ca}$  on a 3 mg/cm<sup>2</sup> Au backing.  $\gamma$  rays were detected with the 4 $\pi$  spectrometer GASP consisting of 40 Compton-suppressed large-volume Ge detectors and an 80 segment BGO multiplicity filter. Measured  $E\gamma$ ,  $I\gamma$ ,  $\gamma\gamma$ -coin,  $\gamma(\theta)$ ,  $\gamma\gamma(\theta)(\text{DCO})$ . Deduced levels, J,  $\pi$ , band structure,  $\gamma$ -ray multipolarities. Comparisons with Total Routhian Surface calculations.

1996MiZU: E=140 MeV  $^{32}\text{S}$  beam was produced from the JAERI tandem accelerator.  $\gamma$  rays were detected with an array of 11 ACS-Ge detectors and charged particles were detected with a Silicon ball of 21 Si detectors around target. Measured  $E\gamma$ ,  $I\gamma$ ,  $\gamma\gamma$ -coin, particle- $\gamma$ -coin. Deduced levels, J,  $\pi$ , band structures.

The level scheme is that of 2001We11 and more complete than that of 1999Da10 in  $^{12}\text{C}(^{58}\text{Ni},\alpha\text{p}\gamma)$  and that of 1980Ka08 in  $^{58}\text{Ni}(^{12}\text{C},\alpha\text{p}\gamma)$ , and is adopted in the Adopted Levels, Gammas by the evaluator.

 $^{65}\text{Ga}$  Levels

| E(level) <sup>†‡</sup>      | J $\pi$ <sup>#</sup> | Comments                                            |
|-----------------------------|----------------------|-----------------------------------------------------|
| 0.0                         | 3/2 <sup>-</sup>     |                                                     |
| 190.77 8                    | 5/2 <sup>-</sup>     |                                                     |
| 808.95 16                   |                      |                                                     |
| 1075.33 8                   | 7/2 <sup>-</sup>     |                                                     |
| 1286.98 10                  | 9/2 <sup>-</sup>     |                                                     |
| 1353.00 12                  |                      |                                                     |
| 2037.72 <sup>d</sup> 10     | 9/2 <sup>+</sup>     |                                                     |
| 2788.50 13                  | 13/2 <sup>-</sup>    |                                                     |
| 2813.48 12                  | 11/2 <sup>(+)</sup>  |                                                     |
| 3064.63 <sup>d</sup> 12     | 13/2 <sup>+</sup>    |                                                     |
| 3732.80 12                  | 15/2 <sup>(+)</sup>  |                                                     |
| 3910.07 14                  | 15/2 <sup>(+)</sup>  |                                                     |
| 4122.76 <sup>d</sup> 13     | 17/2 <sup>+</sup>    |                                                     |
| 4330.74 13                  | 17/2 <sup>+</sup>    |                                                     |
| 4433.66 13                  | 17/2 <sup>+</sup>    |                                                     |
| 4547.08 13                  | 19/2 <sup>(+)</sup>  |                                                     |
| 4633.00 14                  | 17/2 <sup>+</sup>    |                                                     |
| 4850.19 14                  | 17/2 <sup>+</sup>    |                                                     |
| 5467.19 <sup>&amp;</sup> 13 | 19/2 <sup>(-)</sup>  | J $\pi$ : 19/2 <sup>-</sup> in table 2 of 2001We11. |
| 5497.95 <sup>d</sup> 13     | 21/2 <sup>+</sup>    |                                                     |
| 5917.61 <sup>b</sup> 14     | 21/2 <sup>+</sup>    |                                                     |
| 5944.88 <sup>@</sup> 15     | 21/2 <sup>(-)</sup>  |                                                     |
| 6121.31 17                  |                      |                                                     |
| 6295.29 <sup>&amp;</sup> 14 | 23/2 <sup>(-)</sup>  | J $\pi$ : 23/2 <sup>-</sup> in table 2 of 2001We11. |
| 6816.90 <sup>b</sup> 15     | 25/2 <sup>+</sup>    |                                                     |
| 7089.67 <sup>@</sup> 17     | 25/2 <sup>(-)</sup>  |                                                     |
| 7363.12 <sup>&amp;</sup> 17 | 27/2 <sup>(-)</sup>  | J $\pi$ : 27/2 <sup>-</sup> in table 2 of 2001We11. |
| 7942.10 <sup>b</sup> 17     | 29/2 <sup>+</sup>    |                                                     |
| 8199.62 <sup>c</sup> 17     | (27/2 <sup>+</sup> ) |                                                     |
| 8498.87 <sup>@</sup> 18     | 29/2 <sup>(-)</sup>  |                                                     |
| 8605.21 <sup>&amp;</sup> 19 | 31/2 <sup>(-)</sup>  | J $\pi$ : 31/2 <sup>-</sup> in table 2 of 2001We11. |
| 9332.16 <sup>b</sup> 19     | 33/2 <sup>+</sup>    |                                                     |
| 9402.54 <sup>c</sup> 18     | (31/2 <sup>+</sup> ) |                                                     |

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$^{40}\text{Ca}(^{32}\text{S},\alpha^3\text{p}\gamma)$  **2001We11** (continued) $^{65}\text{Ga}$  Levels (continued)

| E(level) <sup>†‡</sup>       | J <sup>π</sup> #     | Comments                                                             |
|------------------------------|----------------------|----------------------------------------------------------------------|
| 10169.13 <sup>&amp;</sup> 28 | (35/2 <sup>-</sup> ) | J <sup>π</sup> : assigned by the evaluator based on band assignment. |
| 10192.56 <sup>@</sup> 27     | (33/2 <sup>-</sup> ) | J <sup>π</sup> : assigned by the evaluator based on band assignment. |
| 10508.5 <sup>a</sup> 4       |                      |                                                                      |
| 10977.78 <sup>c</sup> 20     | (35/2 <sup>+</sup> ) |                                                                      |
| 11070.06 <sup>b</sup> 21     | 37/2 <sup>+</sup>    | E(level): 11067.5 in table 2 of <b>2001We11</b> deviates by 1.5 keV. |
| 12189.08 <sup>a</sup> 35     |                      |                                                                      |
| 12790.10 <sup>c</sup> 22     | (39/2 <sup>+</sup> ) |                                                                      |
| 13239.35 <sup>b</sup> 27     | 41/2 <sup>+</sup>    | E(level): 13236.9 in table 2 of <b>2001We11</b> deviates by 1.8 keV. |
| 14025.5 <sup>a</sup> 4       |                      |                                                                      |
| 15043.61 <sup>c</sup> 30     | (43/2 <sup>+</sup> ) |                                                                      |
| 15981.7 <sup>a</sup> 4       |                      |                                                                      |

<sup>†</sup> Additional information 1.

<sup>‡</sup> From a least-squares fit to  $\gamma$ -ray energies.

# From **2001We11** deduced based on measured  $\gamma(\theta)$ ,  $\gamma\gamma(\text{DCO})$ ,  $\gamma\gamma(\text{ADO})$ , band assignments and known assignments of low-lying states, unless otherwise noted. When considered in the Adopted Levels, parentheses are used around the assignment if there are no strong supporting arguments.

@ Band(A): Band based on 21/2<sup>(-)</sup>.

& Band(B): Band based on 19/2<sup>(-)</sup>.

<sup>a</sup> Band(C):  $\gamma$  sequence.

<sup>b</sup> Band(D): Band based on 21/2<sup>+</sup>.

<sup>c</sup> Band(E): Band based on (27/2<sup>+</sup>).

<sup>d</sup> Band(F): Band based on 2038, 9/2<sup>+</sup> level.

 $\gamma(^{65}\text{Ga})$ 

R=Angular distribution asymmetry (ADO) for values given under comments. Expected values are  $\approx 1.1$  for a stretched quadrupole transition and  $\approx 0.6$  for a stretched dipole transition (**2001We11**).

For DCO values under comments, expected values are  $\approx 1.0$  for a stretched quadrupole transition and  $\approx 0.5$  for a stretched dipole transition, with gates on stretched quadrupole transitions. For dipole transitions with  $\Delta J=0$  and small mixing ratios ( $\delta < 0.5$ ), DCO is also  $\approx 1.0$  (**2001We11**).

| $E_\gamma$ # | $I_\gamma$ # | $E_i(\text{level})$ | $J_i^\pi$           | $E_f$   | $J_f^\pi$           | Mult. @ | Comments                                                                                                  |
|--------------|--------------|---------------------|---------------------|---------|---------------------|---------|-----------------------------------------------------------------------------------------------------------|
| 190.8 1      | 100 3        | 190.77              | 5/2 <sup>-</sup>    | 0.0     | 3/2 <sup>-</sup>    | D       | DCO=0.82 2.<br>R=0.68 1.                                                                                  |
| 216.4 1      | 1.2 1        | 4547.08             | 19/2 <sup>(+)</sup> | 4330.74 | 17/2 <sup>+</sup>   |         |                                                                                                           |
| 310.8 1      | 9.5 3        | 4433.66             | 17/2 <sup>+</sup>   | 4122.76 | 17/2 <sup>+</sup>   |         | Mult.: either Q with $\Delta J=2$ or D with $\Delta J=0$ ( <b>2001We11</b> ).<br>DCO=1.22 6.<br>R=1.15 3. |
| 350.5 1      | 1.0 1        | 6295.29             | 23/2 <sup>(-)</sup> | 5944.88 | 21/2 <sup>(-)</sup> |         |                                                                                                           |
| 419.6 1      | 3.1 1        | 5917.61             | 21/2 <sup>+</sup>   | 5497.95 | 21/2 <sup>+</sup>   |         |                                                                                                           |
| 420.7 1      | 2.6 1        | 4330.74             | 17/2 <sup>+</sup>   | 3910.07 | 15/2 <sup>(+)</sup> | D       | R=0.79 4.                                                                                                 |
| 424.2 1      | 1.3 1        | 4547.08             | 19/2 <sup>(+)</sup> | 4122.76 | 17/2 <sup>+</sup>   |         |                                                                                                           |
| 521.6 1      | 2.2 1        | 6816.90             | 25/2 <sup>+</sup>   | 6295.29 | 23/2 <sup>(-)</sup> |         |                                                                                                           |
| 544.4 2      | 0.5 1        | 1353.00             |                     | 808.95  |                     |         |                                                                                                           |
| 597.9 1      | 4.6 1        | 4330.74             | 17/2 <sup>+</sup>   | 3732.80 | 15/2 <sup>(+)</sup> |         |                                                                                                           |
| 616.9 1      | 3.8 1        | 5467.19             | 19/2 <sup>(-)</sup> | 4850.19 | 17/2 <sup>+</sup>   | D       | R=0.50 3.                                                                                                 |
| 668.3 1      | 5.1 2        | 3732.80             | 15/2 <sup>(+)</sup> | 3064.63 | 13/2 <sup>+</sup>   | D       | R=0.68 4.                                                                                                 |

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$^{40}\text{Ca}(^{32}\text{S},\alpha 3p\gamma)$  **2001We11** (continued) $\gamma(^{65}\text{Ga})$  (continued)

| $E_\gamma$ #          | $I_\gamma$ # | $E_i(\text{level})$ | $J_i^\pi$            | $E_f$   | $J_f^\pi$            | Mult. @ | Comments                                                                                              |
|-----------------------|--------------|---------------------|----------------------|---------|----------------------|---------|-------------------------------------------------------------------------------------------------------|
| 684.8 1               | 0.8 1        | 2037.72             | 9/2 <sup>+</sup>     | 1353.00 |                      |         |                                                                                                       |
| 700.7 1               | 2.2 1        | 4433.66             | 17/2 <sup>+</sup>    | 3732.80 | 15/2 <sup>(+)</sup>  | D       | R=0.51 5.                                                                                             |
| 727.3 1               | 3.1 1        | 4850.19             | 17/2 <sup>+</sup>    | 4122.76 | 17/2 <sup>+</sup>    |         | Mult.: either Q with $\Delta J=2$ or D with $\Delta J=0$ (2001We11).                                  |
|                       |              |                     |                      |         |                      |         | R=1.10 6.                                                                                             |
| 750.9 1               | 73.4 22      | 2037.72             | 9/2 <sup>+</sup>     | 1286.98 | 9/2 <sup>-</sup>     |         | Mult.: either Q with $\Delta J=2$ or D with $\Delta J=0$ (2001We11).                                  |
|                       |              |                     |                      |         |                      |         | DCO=1.16 5.                                                                                           |
|                       |              |                     |                      |         |                      |         | R=1.08 2.                                                                                             |
| 775.7 2               | 0.8 1        | 2813.48             | 11/2 <sup>(+)</sup>  | 2037.72 | 9/2 <sup>+</sup>     |         |                                                                                                       |
| 797.3 1               | 7.1 2        | 6295.29             | 23/2 <sup>(-)</sup>  | 5497.95 | 21/2 <sup>+</sup>    | D       | R=0.70 3.                                                                                             |
| 809.3 2               | 1.0 2        | 808.95              |                      | 0.0     | 3/2 <sup>-</sup>     |         |                                                                                                       |
| 814.4 1               | 14.1 4       | 4547.08             | 19/2 <sup>(+)</sup>  | 3732.80 | 15/2 <sup>(+)</sup>  | Q       | DCO=1.17 8.                                                                                           |
|                       |              |                     |                      |         |                      |         | R=1.21 4.                                                                                             |
| 828.0 1               | 15.3 5       | 6295.29             | 23/2 <sup>(-)</sup>  | 5467.19 | 19/2 <sup>(-)</sup>  | Q       | DCO=0.95 6.                                                                                           |
|                       |              |                     |                      |         |                      |         | R=1.00 3.                                                                                             |
| 834.4 2               | 0.6 1        | 5467.19             | 19/2 <sup>(-)</sup>  | 4633.00 | 17/2 <sup>+</sup>    |         |                                                                                                       |
| 884.6 1               | 9.7 3        | 1075.33             | 7/2 <sup>-</sup>     | 190.77  | 5/2 <sup>-</sup>     | D       | R=0.75 4.                                                                                             |
| 899.4 1               | 33.7 10      | 6816.90             | 25/2 <sup>+</sup>    | 5917.61 | 21/2 <sup>+</sup>    | Q       | DCO=1.31 6.                                                                                           |
|                       |              |                     |                      |         |                      |         | R=1.35 3.                                                                                             |
| 919.1 1               | 2.6 1        | 3732.80             | 15/2 <sup>(+)</sup>  | 2813.48 | 11/2 <sup>(+)</sup>  | Q       | R=1.05 6.                                                                                             |
| 919.2 <sup>†</sup> 2  | 0.9 1        | 5467.19             | 19/2 <sup>(-)</sup>  | 4547.08 | 19/2 <sup>(+)</sup>  |         | $E_\gamma$ : uncertainty multiplied by a factor of 2 in the fitting; level-energy difference=920.09.  |
| 944.3 1               | 17.8 5       | 3732.80             | 15/2 <sup>(+)</sup>  | 2788.50 | 13/2 <sup>-</sup>    | D       | DCO=0.60 3.                                                                                           |
|                       |              |                     |                      |         |                      |         | R=0.69 2.                                                                                             |
| 962.3 1               | 14.5 4       | 2037.72             | 9/2 <sup>+</sup>     | 1075.33 | 7/2 <sup>-</sup>     | D       | DCO=0.67 4.                                                                                           |
|                       |              |                     |                      |         |                      |         | R=0.68 2.                                                                                             |
| 1027.1 1              | 86 3         | 3064.63             | 13/2 <sup>+</sup>    | 2037.72 | 9/2 <sup>+</sup>     | Q       | DCO=1.28 8.                                                                                           |
|                       |              |                     |                      |         |                      |         | R=1.23 4.                                                                                             |
| 1033.4 1              | 7.1 2        | 5467.19             | 19/2 <sup>(-)</sup>  | 4433.66 | 17/2 <sup>+</sup>    | D       | DCO=0.64 4.                                                                                           |
|                       |              |                     |                      |         |                      |         | R=0.67 3.                                                                                             |
| 1057.9 1              | 65.9 20      | 4122.76             | 17/2 <sup>+</sup>    | 3064.63 | 13/2 <sup>+</sup>    | Q       | DCO=1.12 4.                                                                                           |
|                       |              |                     |                      |         |                      |         | R=1.13 2.                                                                                             |
| 1063.7 <sup>†</sup> 2 | 2.1 1        | 5497.95             | 21/2 <sup>+</sup>    | 4433.66 | 17/2 <sup>+</sup>    |         | $E_\gamma$ : uncertainty multiplied by a factor of 2 in the fitting; level-energy difference=1064.28. |
| 1067.8 1              | 18.2 6       | 7363.12             | 27/2 <sup>(-)</sup>  | 6295.29 | 23/2 <sup>(-)</sup>  | Q       | DCO=0.82 6.                                                                                           |
|                       |              |                     |                      |         |                      |         | R=1.24 5.                                                                                             |
| 1075.2 1              | 9.6 4        | 1075.33             | 7/2 <sup>-</sup>     | 0.0     | 3/2 <sup>-</sup>     | Q       | R=1.09 5.                                                                                             |
| 1096.2 1              | 94 3         | 1286.98             | 9/2 <sup>-</sup>     | 190.77  | 5/2 <sup>-</sup>     | (Q)     | DCO=0.77 4.                                                                                           |
|                       |              |                     |                      |         |                      |         | R=0.94 2.                                                                                             |
| 1096.6 1              | 6.2 3        | 3910.07             | 15/2 <sup>(+)</sup>  | 2813.48 | 11/2 <sup>(+)</sup>  |         |                                                                                                       |
| 1125.2 1              | 48.6 15      | 7942.10             | 29/2 <sup>+</sup>    | 6816.90 | 25/2 <sup>+</sup>    | Q       | DCO=1.14 4.                                                                                           |
|                       |              |                     |                      |         |                      |         | R=1.29 3.                                                                                             |
| 1135.6 2              | 1.3 1        | 8498.87             | 29/2 <sup>(-)</sup>  | 7363.12 | 27/2 <sup>(-)</sup>  |         |                                                                                                       |
| 1136.1 2              | 1.8 1        | 5467.19             | 19/2 <sup>(-)</sup>  | 4330.74 | 17/2 <sup>+</sup>    |         |                                                                                                       |
| 1144.8 1              | 2.6 1        | 7089.67             | 25/2 <sup>(-)</sup>  | 5944.88 | 21/2 <sup>(-)</sup>  | Q       | R=1.27 8.                                                                                             |
| 1167.1 1              | 8.6 3        | 5497.95             | 21/2 <sup>+</sup>    | 4330.74 | 17/2 <sup>+</sup>    | Q       | R=0.97 6.                                                                                             |
| 1202.9 1              | 2.3 1        | 9402.54             | (31/2 <sup>+</sup> ) | 8199.62 | (27/2 <sup>+</sup> ) |         |                                                                                                       |
| 1242.1 1              | 7.7 2        | 8605.21             | 31/2 <sup>(-)</sup>  | 7363.12 | 27/2 <sup>(-)</sup>  | Q       | R=1.13 4.                                                                                             |
| 1266.0 1              | 7.7 2        | 4330.74             | 17/2 <sup>+</sup>    | 3064.63 | 13/2 <sup>+</sup>    | Q       | DCO=0.92 9.                                                                                           |
|                       |              |                     |                      |         |                      |         | R=1.18 7.                                                                                             |
| 1284.7 1              | 4.1 1        | 5917.61             | 21/2 <sup>+</sup>    | 4633.00 | 17/2 <sup>+</sup>    | Q       | R=1.18 10.                                                                                            |
| 1318.5 <sup>†</sup> 1 | 19.1 6       | 6816.90             | 25/2 <sup>+</sup>    | 5497.95 | 21/2 <sup>+</sup>    | Q       | $E_\gamma$ : uncertainty multiplied by a factor of 2 in the fitting; level-energy difference=1318.93. |

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$^{40}\text{Ca}(^{32}\text{S},\alpha^3\text{p}\gamma)$  **2001We11** (continued) $\gamma(^{65}\text{Ga})$  (continued)

| $E_\gamma$ #            | $I_\gamma$ # | $E_i(\text{level})$ | $J_i^\pi$            | $E_f$    | $J_f^\pi$            | Mult. @ | Comments                                                                                                            |
|-------------------------|--------------|---------------------|----------------------|----------|----------------------|---------|---------------------------------------------------------------------------------------------------------------------|
|                         |              |                     |                      |          |                      |         | DCO=1.01 10.<br>R=1.29 8.<br>R=0.56 2.                                                                              |
| 1344.6 1                | 5.9 2        | 5467.19             | 19/2 <sup>(-)</sup>  | 4122.76  | 17/2 <sup>+</sup>    | D       |                                                                                                                     |
| 1352.9 4                | 0.9 1        | 1353.00             |                      | 0.0      | 3/2 <sup>-</sup>     |         |                                                                                                                     |
| 1369.2 1                | 3.2 1        | 4433.66             | 17/2 <sup>+</sup>    | 3064.63  | 13/2 <sup>+</sup>    | Q       | R=1.39 11.                                                                                                          |
| 1375.1 1                | 17.5 5       | 5497.95             | 21/2 <sup>+</sup>    | 4122.76  | 17/2 <sup>+</sup>    | Q       | DCO=1.03 5.<br>R=1.04 3.                                                                                            |
| 1382.7 1                | 5.2 1        | 8199.62             | (27/2 <sup>+</sup> ) | 6816.90  | 25/2 <sup>+</sup>    |         |                                                                                                                     |
| 1390.0 1                | 35.0 11      | 9332.16             | 33/2 <sup>+</sup>    | 7942.10  | 29/2 <sup>+</sup>    | Q       | DCO=1.10 4.<br>R=1.24 3.                                                                                            |
| 1397.9 1                | 6.6 2        | 5944.88             | 21/2 <sup>(-)</sup>  | 4547.08  | 19/2 <sup>(+)</sup>  | D       | R=0.61 2.                                                                                                           |
| 1409.2 1                | 1.4 1        | 8498.87             | 29/2 <sup>(-)</sup>  | 7089.67  | 25/2 <sup>(-)</sup>  | Q       | R=1.25 9.                                                                                                           |
| 1460.5 1                | 2.9 1        | 9402.54             | (31/2 <sup>+</sup> ) | 7942.10  | 29/2 <sup>+</sup>    |         |                                                                                                                     |
| 1484.0 1                | 3.4 1        | 5917.61             | 21/2 <sup>+</sup>    | 4433.66  | 17/2 <sup>+</sup>    |         |                                                                                                                     |
| 1501.5 1                | 17.2 5       | 2788.50             | 13/2 <sup>-</sup>    | 1286.98  | 9/2 <sup>-</sup>     | Q       | DCO=0.94 9.<br>R=1.04 5.<br>R=0.66 3.                                                                               |
| 1526.3 1                | 6.8 2        | 2813.48             | 11/2 <sup>(+)</sup>  | 1286.98  | 9/2 <sup>-</sup>     | D       |                                                                                                                     |
| 1563.9 2                | 1.4 1        | 10169.13            | (35/2 <sup>-</sup> ) | 8605.21  | 31/2 <sup>(-)</sup>  |         |                                                                                                                     |
| 1568.5 1                | 5.5 2        | 4633.00             | 17/2 <sup>+</sup>    | 3064.63  | 13/2 <sup>+</sup>    | Q       | R=1.18 6.                                                                                                           |
| 1574.2 1                | 2.9 1        | 6121.31             |                      | 4547.08  | 19/2 <sup>(+)</sup>  |         |                                                                                                                     |
| 1575.3 1                | 3.1 1        | 10977.78            | (35/2 <sup>+</sup> ) | 9402.54  | (31/2 <sup>+</sup> ) |         |                                                                                                                     |
| 1589.6 <sup>†</sup> & 4 | 0.4 1        | 10192.56            | (33/2 <sup>-</sup> ) | 8605.21  | 31/2 <sup>(-)</sup>  |         | $E_\gamma$ : uncertainty multiplied by a factor of 3 in the fitting; level-energy difference=1587.32.               |
| 1644.9 <sup>†</sup> 1   | 1.6 1        | 10977.78            | (35/2 <sup>+</sup> ) | 9332.16  | 33/2 <sup>+</sup>    | (D)     | $E_\gamma$ : uncertainty multiplied by a factor of 3 in the fitting; level-energy difference=1645.60.<br>R=0.36 3.  |
| 1680.4 2                | 1.3 2        | 12189.08            |                      | 10508.5  |                      |         |                                                                                                                     |
| 1693.6 2                | 1.4 1        | 10192.56            | (33/2 <sup>-</sup> ) | 8498.87  | 29/2 <sup>(-)</sup>  |         |                                                                                                                     |
| 1724.6 <sup>‡</sup> 2   | 1.4 1        | 12790.10            | (39/2 <sup>+</sup> ) | 11070.06 | 37/2 <sup>+</sup>    |         | $E_\gamma$ : very poor fit and omitted in the fitting; level-energy difference=1720.01.                             |
| 1737.9 1                | 20.0 6       | 11070.06            | 37/2 <sup>+</sup>    | 9332.16  | 33/2 <sup>+</sup>    | Q       | DCO=1.01 4.<br>R=1.31 3.                                                                                            |
| 1785.8 3                | 0.7 1        | 4850.19             | 17/2 <sup>+</sup>    | 3064.63  | 13/2 <sup>+</sup>    |         |                                                                                                                     |
| 1794.0 <sup>‡</sup> 1   | 19.6 6       | 5917.61             | 21/2 <sup>+</sup>    | 4122.76  | 17/2 <sup>+</sup>    | (Q)     | $E_\gamma$ : very poor fit and omitted in the fitting; level-energy difference=1794.82.<br>DCO=0.84 5.<br>R=1.17 3. |
| 1804.2 3                | 0.7 1        | 15043.61            | (43/2 <sup>+</sup> ) | 13239.35 | 41/2 <sup>+</sup>    |         |                                                                                                                     |
| 1812.3 1                | 2.9 1        | 12790.10            | (39/2 <sup>+</sup> ) | 10977.78 | (35/2 <sup>+</sup> ) |         |                                                                                                                     |
| 1836.3 2                | 0.9 2        | 14025.5             |                      | 12189.08 |                      |         |                                                                                                                     |
| 1956.2 2                | 1.4 2        | 15981.7             |                      | 14025.5  |                      |         |                                                                                                                     |
| 2169.2 2                | 5.7 2        | 13239.35            | 41/2 <sup>+</sup>    | 11070.06 | 37/2 <sup>+</sup>    | Q       | DCO=1.25 9.<br>R=1.32 5.                                                                                            |
| 2253.5 3                | 1.5 2        | 15043.61            | (43/2 <sup>+</sup> ) | 12790.10 | (39/2 <sup>+</sup> ) |         |                                                                                                                     |
| 2565.3 5                | 0.8 3        | 10508.5             |                      | 7942.10  | 29/2 <sup>+</sup>    |         |                                                                                                                     |
| 2741.5 9                | 0.2 2        | 15981.7             |                      | 13239.35 | 41/2 <sup>+</sup>    |         |                                                                                                                     |
| 2857.3 5                | 0.7 4        | 12189.08            |                      | 9332.16  | 33/2 <sup>+</sup>    |         |                                                                                                                     |
| 2956.2 5                | 0.6 4        | 14025.5             |                      | 11070.06 | 37/2 <sup>+</sup>    |         |                                                                                                                     |

<sup>†</sup> Poor fit; uncertainty multiplied by a factor in the fitting.<sup>‡</sup> Very poor fit and omitted in the fitting.# From **2001We11**, unless otherwise noted.

Continued on next page (footnotes at end of table)

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$^{40}\text{Ca}(^{32}\text{S},\alpha 3\text{p}\gamma)$  [2001We11](#) (continued)

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$\gamma(^{65}\text{Ga})$  (continued)

@ Deduced by the evaluator based on measured DCO ratios and/or angular asymmetry ratios in [2001We11](#) as given under comments, unless otherwise noted. Assignments are not explicitly listed in [2001We11](#).

& Placement of transition in the level scheme is uncertain.

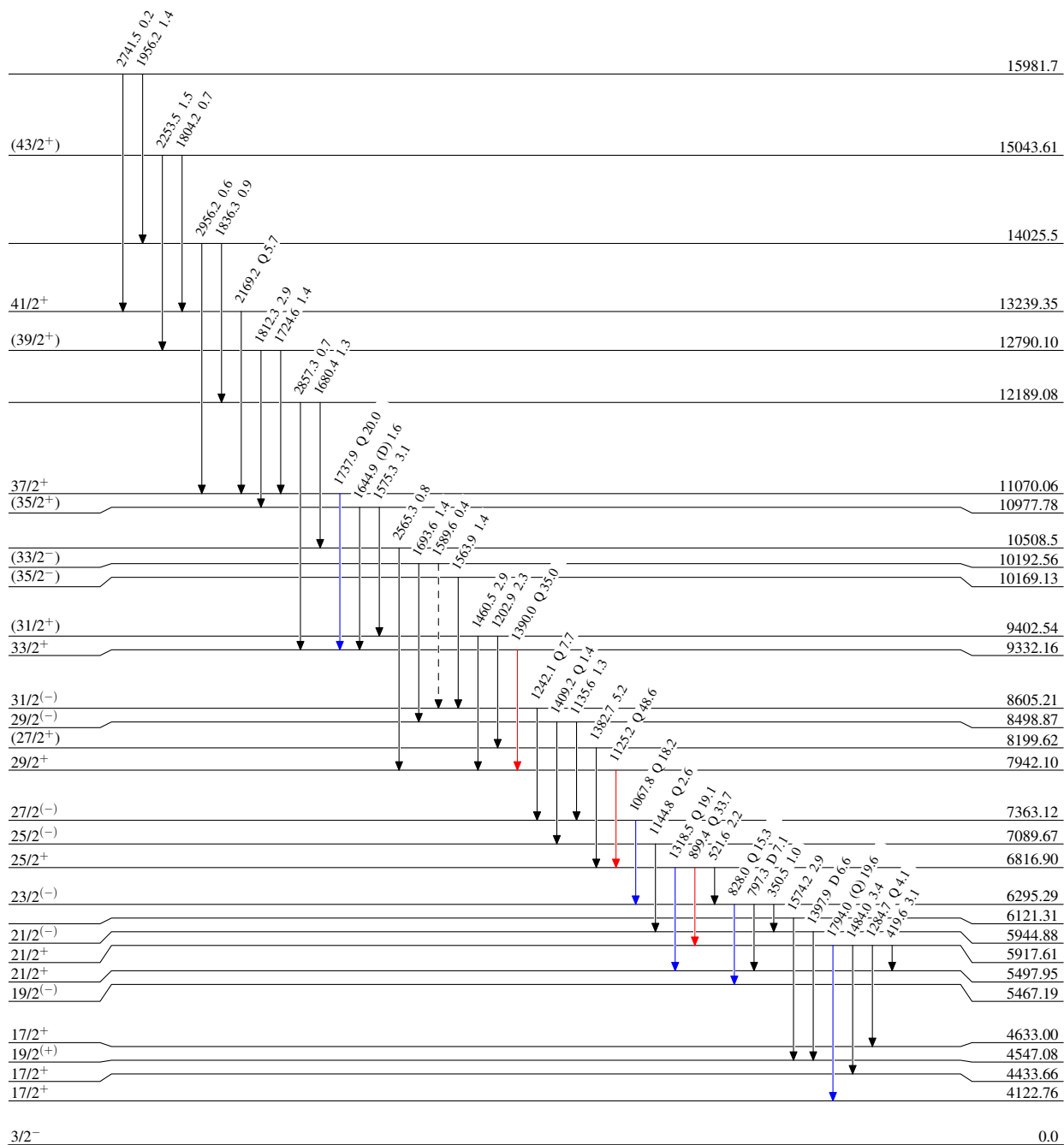
$^{40}\text{Ca}(^{32}\text{S},\alpha 3p\gamma)$  2001We11

Legend

## Level Scheme

Intensities: Relative  $I_\gamma$ 

- $\longrightarrow$   $I_\gamma < 2\% \times I_\gamma^{\max}$   
 $\longrightarrow$   $I_\gamma < 10\% \times I_\gamma^{\max}$   
 $\longrightarrow$   $I_\gamma > 10\% \times I_\gamma^{\max}$   
 $\cdots \longrightarrow$   $\gamma$  Decay (Uncertain)



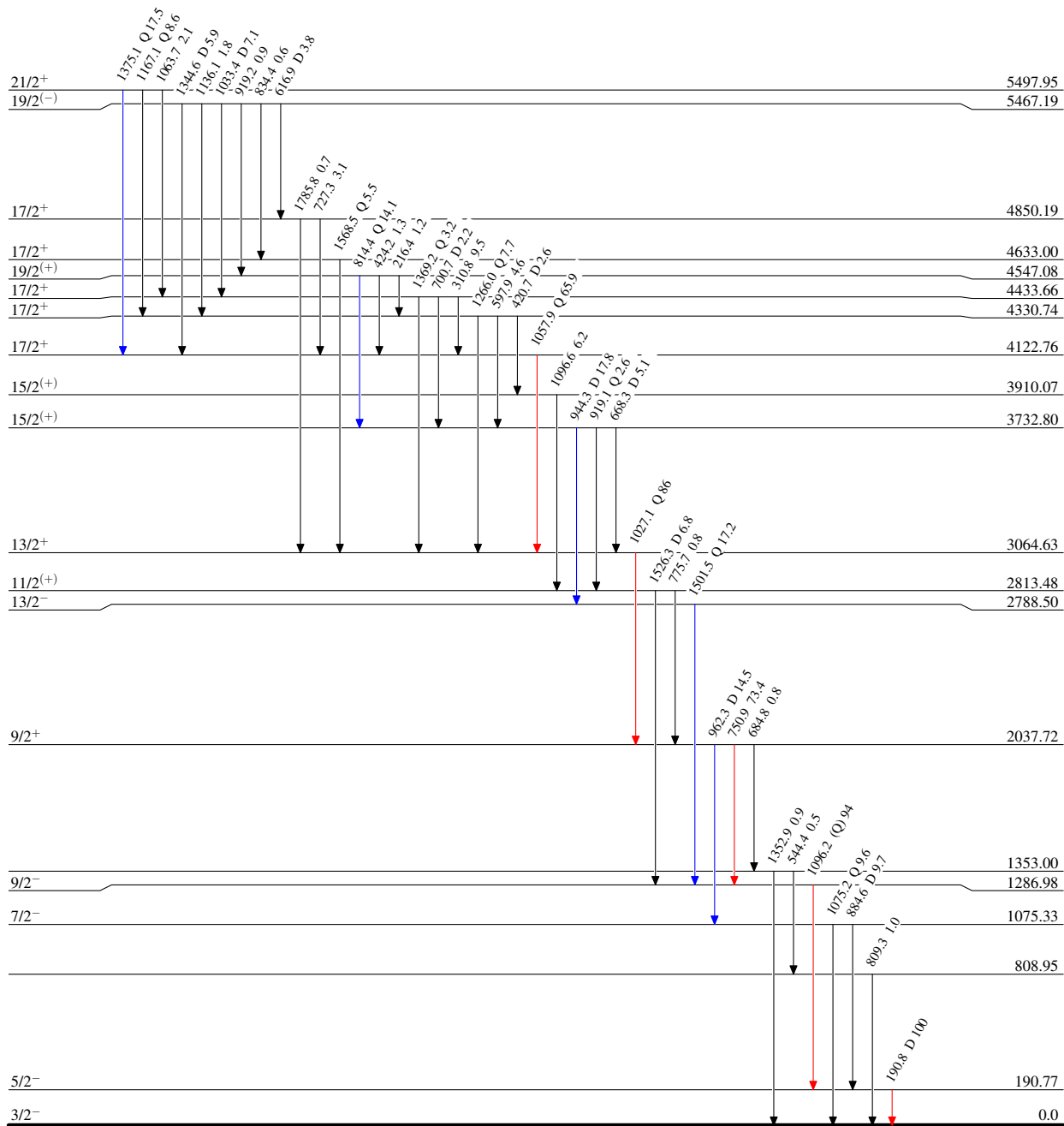
$^{40}\text{Ca}(^{32}\text{S},\alpha^3\text{p}\gamma)$  2001We11

## Level Scheme (continued)

Intensities: Relative  $I_\gamma$ 

## Legend

- $\longrightarrow$   $I_\gamma < 2\% \times I_\gamma^{\max}$   
 $\longrightarrow$   $I_\gamma < 10\% \times I_\gamma^{\max}$   
 $\longrightarrow$   $I_\gamma > 10\% \times I_\gamma^{\max}$

 $^{65}_{31}\text{Ga}_{34}$

$^{40}\text{Ca}(^{32}\text{S},\alpha 3p\gamma)$  2001We11