

$^{40}\text{Ca}(^{36}\text{Ar}, 2\text{p}2\text{n}\gamma)$  2001Ke11

| Type            | Author                        | History | Citation         | Literature Cutoff Date |
|-----------------|-------------------------------|---------|------------------|------------------------|
| Full Evaluation | D. Abriola(a), A. A. Sonzogni |         | NDS 111,1 (2010) | 1-May-2009             |

E=145 MeV. Measured  $E\gamma$ ,  $I\gamma$ ,  $\gamma\gamma$  and  $\gamma\gamma(\theta)(\text{DCO})$  using GAMMASPHERE detector array comprised of 78 escape suppressed HPGE detectors in conjunction with the Microball array.

 $^{72}\text{Kr}$  Levels

The ordering of some of the levels has not been adopted. See Adopted Levels, Gammas.

| E(level) <sup>†</sup>   | J <sup>π</sup>     | Comments                                                                |
|-------------------------|--------------------|-------------------------------------------------------------------------|
| 0 <sup>‡</sup>          | 0 <sup>+</sup>     |                                                                         |
| 709.70 <sup>‡</sup> 10  | 2 <sup>+</sup>     |                                                                         |
| 1321.30 <sup>‡</sup> 15 | 4 <sup>+</sup>     |                                                                         |
| 1849.02 <sup>#</sup> 23 | (3 <sup>-</sup> )  |                                                                         |
| 2112.81 <sup>‡</sup> 18 | 6 <sup>+</sup>     |                                                                         |
| 2455.41 <sup>#</sup> 18 | (5 <sup>-</sup> )  |                                                                         |
| 3108.32 <sup>‡</sup> 20 | 8 <sup>+</sup>     |                                                                         |
| 3265.4 <sup>#</sup> 20  | (7 <sup>-</sup> )  |                                                                         |
| 3796.7 <sup>@</sup> 10  |                    |                                                                         |
| 4282.6 <sup>#</sup> 22  | (9 <sup>-</sup> )  |                                                                         |
| 4294.2 <sup>‡</sup> 9   | 10 <sup>+</sup>    |                                                                         |
| 4756.7 <sup>@</sup> 10  |                    |                                                                         |
| 5496.9 <sup>#</sup> 23  | (11 <sup>-</sup> ) |                                                                         |
| 5649.3 <sup>‡</sup> 9   | 12 <sup>+</sup>    |                                                                         |
| 5649.3+x                |                    | E(level): this level seems to decay to the 5649, 12 <sup>+</sup> level. |
| 5873.8 <sup>@</sup> 23  |                    |                                                                         |
| 6672.3+x 10             |                    |                                                                         |
| 6890.9 <sup>#</sup> 25  | (13 <sup>-</sup> ) |                                                                         |
| 7157.4 <sup>‡</sup> 9   | 14 <sup>+</sup>    |                                                                         |
| 7163.8 <sup>@</sup> 25  |                    |                                                                         |
| 8260.3+x 15             |                    |                                                                         |
| 8447 <sup>#</sup> 4     | (15 <sup>-</sup> ) |                                                                         |
| 8524.4 22               | (15)               |                                                                         |
| 8598 <sup>@</sup> 4     |                    |                                                                         |
| 8821.6 <sup>‡</sup> 10  | (16 <sup>+</sup> ) |                                                                         |
| 10093 <sup>@</sup> 4    |                    |                                                                         |
| 10141 <sup>#</sup> 4    | (17 <sup>-</sup> ) |                                                                         |
| 10557.7 <sup>‡</sup> 12 | (18 <sup>+</sup> ) |                                                                         |
| 12382.7 <sup>‡</sup> 23 | (20 <sup>+</sup> ) |                                                                         |

<sup>†</sup> From least-squares fit to  $E\gamma$ 's.

<sup>‡</sup> Band(A): g.s. Band. See Adopted Levels for a more up-to-date interpretation of the band structures.

<sup>#</sup> Band(B): Band based on 3<sup>-</sup>.

<sup>@</sup> Band(C): Side Band, the ordering of the gamma rays in this band for the adopted gammas has changed, reflecting the more comprehensive data in (HI,xn $\gamma$ ).

$^{40}\text{Ca}(^{36}\text{Ar}, 2\text{p}2\text{n}\gamma)$  **2001Ke11** (continued) $\gamma(^{72}\text{Kr})$ 

| $E_\gamma$           | $I_\gamma$ | $E_i(\text{level})$ | $J_i^\pi$          | $E_f$    | $J_f^\pi$          | Mult. | Comments                                                                                                                            |
|----------------------|------------|---------------------|--------------------|----------|--------------------|-------|-------------------------------------------------------------------------------------------------------------------------------------|
| 606 <sup>†</sup> 2   | 5 1        | 2455.41             | (5 <sup>-</sup> )  | 1849.02  | (3 <sup>-</sup> )  | (E2)  |                                                                                                                                     |
| 611.6 1              | 93 12      | 1321.30             | 4 <sup>+</sup>     | 709.70   | 2 <sup>+</sup>     | E2    | DCO=0.97 +8-7.                                                                                                                      |
| 709.7 1              | 100 8      | 709.70              | 2 <sup>+</sup>     | 0        | 0 <sup>+</sup>     | E2    | DCO=1.25 +15-13.                                                                                                                    |
| 791.5 1              | 78 9       | 2112.81             | 6 <sup>+</sup>     | 1321.30  | 4 <sup>+</sup>     | E2    | DCO=1.34 +14-12.                                                                                                                    |
| 810 <sup>†</sup> 2   | 9 2        | 3265.4              | (7 <sup>-</sup> )  | 2455.41  | (5 <sup>-</sup> )  | (E2)  |                                                                                                                                     |
| 960.0 3              | 4 1        | 4756.7              |                    | 3796.7   |                    |       |                                                                                                                                     |
| 995.5 1              | 47 8       | 3108.32             | 8 <sup>+</sup>     | 2112.81  | 6 <sup>+</sup>     | E2    | DCO=0.97 +10-9.                                                                                                                     |
| 1017.2 8             | 8 3        | 4282.6              | (9 <sup>-</sup> )  | 3265.4   | (7 <sup>-</sup> )  | (E2)  |                                                                                                                                     |
| 1023 1               | 2 2        | 6672.3+x            |                    | 5649.3+x |                    |       | 1023 $\gamma$ in coincidence with 1355 $\gamma$ and 1588 $\gamma$ . See Adopted Levels, Gammas for the placement of this $\gamma$ . |
| 1117 2               | 7 1        | 5873.8              |                    | 4756.7   |                    |       |                                                                                                                                     |
| 1134.1 1             | 5 1        | 2455.41             | (5 <sup>-</sup> )  | 1321.30  | 4 <sup>+</sup>     | (E1)  | DCO=0.84 +17-14.                                                                                                                    |
| 1139.3 2             | 5 2        | 1849.02             | (3 <sup>-</sup> )  | 709.70   | 2 <sup>+</sup>     | (E1)  |                                                                                                                                     |
| 1185.9 8             | 16 4       | 4294.2              | 10 <sup>+</sup>    | 3108.32  | 8 <sup>+</sup>     | E2    | DCO=0.95 +12-10.                                                                                                                    |
| 1214.3 5             | 6 2        | 5496.9              | (11 <sup>-</sup> ) | 4282.6   | (9 <sup>-</sup> )  | (E2)  |                                                                                                                                     |
| 1290 1               | 5 3        | 7163.8              |                    | 5873.8   |                    |       |                                                                                                                                     |
| 1355.1 1             | 13 7       | 5649.3              | 12 <sup>+</sup>    | 4294.2   | 10 <sup>+</sup>    | E2    | DCO=1.18 +18-16.                                                                                                                    |
| 1367 <sup>†</sup> 2  | 1.7 4      | 8524.4              | (15)               | 7157.4   | 14 <sup>+</sup>    | (D)   | DCO=0.67 +19-15.                                                                                                                    |
| 1394 1               | 2.3 8      | 6890.9              | (13 <sup>-</sup> ) | 5496.9   | (11 <sup>-</sup> ) | (E2)  |                                                                                                                                     |
| 1434 <sup>‡</sup> 2  | 4 2        | 8598                |                    | 7163.8   |                    |       |                                                                                                                                     |
| 1495 <sup>‡</sup> 1  | 1.4 7      | 10093               |                    | 8598     |                    |       |                                                                                                                                     |
| 1508.1 3             | 10 3       | 7157.4              | 14 <sup>+</sup>    | 5649.3   | 12 <sup>+</sup>    | E2    | DCO=1.12 +19-16.                                                                                                                    |
| 1556 <sup>†</sup> 2  | 1.5 1      | 8447                | (15 <sup>-</sup> ) | 6890.9   | (13 <sup>-</sup> ) | (E2)  |                                                                                                                                     |
| 1588 1               | 1.7 2      | 8260.3+x            |                    | 6672.3+x |                    |       | 1588 $\gamma$ in coincidence with 1508 $\gamma$ See Adopted Levels, Gammas for the placement of this $\gamma$ .                     |
| 1664.2 4             | 3.2 2      | 8821.6              | (16 <sup>+</sup> ) | 7157.4   | 14 <sup>+</sup>    | (E2)  |                                                                                                                                     |
| 1683.9 9             | 2.3 7      | 3796.7              |                    | 2112.81  | 6 <sup>+</sup>     |       |                                                                                                                                     |
| 1694 <sup>†‡</sup> 2 | 1.3 8      | 10141               | (17 <sup>-</sup> ) | 8447     | (15 <sup>-</sup> ) | (E2)  |                                                                                                                                     |
| 1736.0 6             | 1.5 2      | 10557.7             | (18 <sup>+</sup> ) | 8821.6   | (16 <sup>+</sup> ) | (E2)  |                                                                                                                                     |
| 1825 <sup>†</sup> 2  | 1 1        | 12382.7             | (20 <sup>+</sup> ) | 10557.7  | (18 <sup>+</sup> ) | (E2)  |                                                                                                                                     |

<sup>†</sup> Uncertainty given in table I of **2001Ke11** reduced to 2 keV as suggested in an E-mail reply from one of the authors (Wadsworth, July 11, 2001).

<sup>‡</sup> Placement of transition in the level scheme is uncertain.

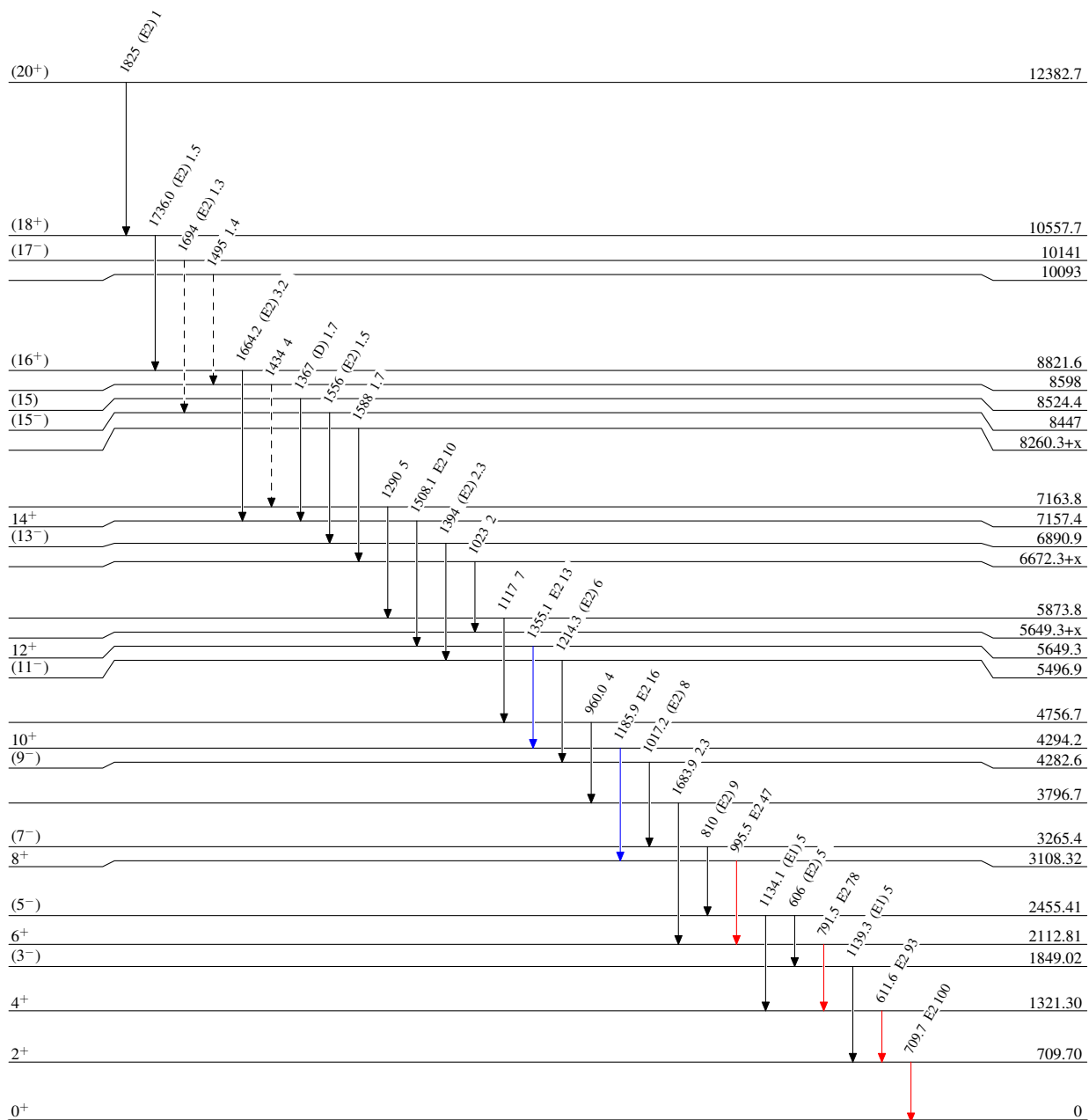
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## Level Scheme

Intensities: Relative  $I_\gamma$ 

## Legend

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



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