

$^{27}\text{Al}(\gamma, \gamma')$  **1987Vo01,1995Pi02**

| Type            | Author                 | History | Citation            | Literature Cutoff Date |
|-----------------|------------------------|---------|---------------------|------------------------|
| Full Evaluation | M. Shamsuzzoha Basunia |         | NDS 112,1875 (2011) | 30-Nov-2010            |

**1987Vo01:**  $^{27}\text{Al}(\gamma, \gamma')$ ,  $E=7.66, 10.37$  MeV; Ge(Li) detector at  $127^\circ$ , measured  $\sigma(E, \theta)$ . Deduced level energy.

**1995Pi02:**  $^{27}\text{Al}(\gamma, \gamma')$ ,  $E < 4.2$  MeV bremsstrahlung; HPGe detectors at  $90^\circ, 130^\circ, 150^\circ$ ; Measured:  $E_\gamma$ , nuclear self absorption; deduced level energies, level widths and half-lives.

 $^{27}\text{Al}$  Levels

| E(level) <sup>†</sup> | J $\pi$ <sup>‡</sup> | T <sub>1/2</sub> <sup>#</sup> | Comments                                                                                                                                                                                                                                      |
|-----------------------|----------------------|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0                     | 5/2 <sup>+</sup>     |                               |                                                                                                                                                                                                                                               |
| 2212.01 10            | (7/2 <sup>+</sup> )  | 26.4 <sup>@</sup> fs 7        | E(level): From <b>1995Pi02</b> .                                                                                                                                                                                                              |
| 2734.9 7              | 5/2 <sup>+</sup>     | 10 <sup>@</sup> fs 4          |                                                                                                                                                                                                                                               |
| 2982.00 5             | 3/2 <sup>+</sup>     | 3.90 <sup>@</sup> fs 9        | (2J+1) $\Gamma_{\gamma 0}$ [eV]=93 25.<br>T <sub>1/2</sub> : Other: 3.2 fs 9 ( <b>1987Vo01</b> ).                                                                                                                                             |
| 3004.2 8              | (9/2 <sup>+</sup> )  | 49 fs 23                      | (2J+1) $\Gamma_{\gamma 0}$ [eV]=17 10.<br>T <sub>1/2</sub> : Weighted average of 64 fs 27 ( <b>1995Pi02</b> ) and 39 fs 23 ( <b>1987Vo01</b> ) is 49 fs 18. The quoted uncertainty is the smaller one between two experimental uncertainties. |
| 3956.8 4              | 3/2 <sup>+</sup>     | 2.6 fs 3                      | (2J+1) $\Gamma_{\gamma 0}$ [eV]=105 12.<br>T <sub>1/2</sub> : Weighted average of 2.7 fs 3 ( <b>1995Pi02</b> ) and 2.5 fs 3 ( <b>1987Vo01</b> ) is 2.6 fs 2. The quoted uncertainty is from experimental data.                                |
| 4410.2 4              | 5/2 <sup>+</sup>     | 1.13 fs 15                    | (2J+1) $\Gamma_{\gamma 0}$ [eV]=230 30.                                                                                                                                                                                                       |
| 4580.0 8              | (7/2 <sup>+</sup> )  | 5.3 fs 5                      | (2J+1) $\Gamma_{\gamma 0}$ [eV]=81 8.                                                                                                                                                                                                         |
| 4811.6 5              | 5/2 <sup>+</sup>     | 1.55 fs 25                    | (2J+1) $\Gamma_{\gamma 0}$ [eV]=94 15.                                                                                                                                                                                                        |
| 5155.6 8              | 3/2 <sup>-</sup>     | 2.4 fs 3                      | (2J+1) $\Gamma_{\gamma 0}$ [eV]=100 12.                                                                                                                                                                                                       |
| 5432.8 10             | 7/2                  | 5 fs 3                        | (2J+1) $\Gamma_{\gamma 0}$ [eV]=60 40.                                                                                                                                                                                                        |
| 5438.4 8              | 5/2 <sup>-</sup>     | 5 fs 4                        | (2J+1) $\Gamma_{\gamma 0}$ [eV]=70 50.                                                                                                                                                                                                        |
| 5550.9 5              | 5/2                  | 2.6 fs 5                      | (2J+1) $\Gamma_{\gamma 0}$ [eV]=130 25.                                                                                                                                                                                                       |
| 5960.3 7              | (7/2)                | 1.7 fs 12                     | (2J+1) $\Gamma_{\gamma 0}$ [eV]=70 50.                                                                                                                                                                                                        |
| 6080.8 9              | 3/2                  | 3.3 fs 7                      | (2J+1) $\Gamma_{\gamma 0}$ [eV]=64 14.                                                                                                                                                                                                        |
| 6284.7 15             | (7/2 <sup>+</sup> )  | 5.1 fs 21                     | (2J+1) $\Gamma_{\gamma 0}$ [eV]=72 30.                                                                                                                                                                                                        |
| 6462.8 13             | 5/2                  | 0.78 fs 8                     | (2J+1) $\Gamma_{\gamma 0}$ [eV]=490 50.                                                                                                                                                                                                       |
| 6477.3 9              | (7/2) <sup>-</sup>   | 1.8 fs 3                      | (2J+1) $\Gamma_{\gamma 0}$ [eV]=220 35.                                                                                                                                                                                                       |
| 6533 1                | 7/2 <sup>+</sup>     | 1.1 fs 8                      | (2J+1) $\Gamma_{\gamma 0}$ [eV]=100 70.                                                                                                                                                                                                       |
| 6651.3 7              | 5/2 <sup>-</sup>     | 0.56 fs 3                     | (2J+1) $\Gamma_{\gamma 0}$ [eV]=720 40.                                                                                                                                                                                                       |
| 7413 1                | 7/2 <sup>+</sup>     | 0.56 fs 8                     | (2J+1) $\Gamma_{\gamma 0}$ [eV]=8.3E2 12.                                                                                                                                                                                                     |
| 7477.1 9              | 7/2 <sup>-</sup>     | 0.68 fs 9                     | (2J+1) $\Gamma_{\gamma 0}$ [eV]=450 60.                                                                                                                                                                                                       |
| 7578 2                | 5/2 <sup>+</sup>     | 0.47 fs 7                     | (2J+1) $\Gamma_{\gamma 0}$ [eV]=450 70.                                                                                                                                                                                                       |
| 8037 1                | 7/2                  | 0.43 fs 3                     | (2J+1) $\Gamma_{\gamma 0}$ [eV]=1140 90.                                                                                                                                                                                                      |
| 8442 1                | (7/2)                | 0.50 fs 6                     | (2J+1) $\Gamma_{\gamma 0}$ [eV]=640 70.                                                                                                                                                                                                       |
| 8676 2                |                      |                               |                                                                                                                                                                                                                                               |
| 8731 2                |                      |                               |                                                                                                                                                                                                                                               |
| 8752 2                |                      |                               |                                                                                                                                                                                                                                               |
| 8772 2                |                      |                               |                                                                                                                                                                                                                                               |
| 8898 3                |                      |                               |                                                                                                                                                                                                                                               |
| 9053 3                |                      |                               |                                                                                                                                                                                                                                               |
| 9500 3                |                      |                               |                                                                                                                                                                                                                                               |
| 9597 3                |                      |                               |                                                                                                                                                                                                                                               |
| 9657 3                |                      |                               |                                                                                                                                                                                                                                               |
| 9794 3                |                      |                               |                                                                                                                                                                                                                                               |

<sup>†</sup> Up to 8442 keV from Adopted Levels, above this energy from **1987Vo01**, except otherwise noted.

<sup>‡</sup> From Adopted Levels.

<sup>#</sup> Deduced by the evaluator from reported  $g\Gamma_0/\Gamma = g\Gamma_0$  values (**1987Vo01**), J assignments, and  $\gamma$ -ray g.s. branching for bound

Continued on next page (footnotes at end of table)

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$^{27}\text{Al}(\gamma, \gamma')$     [1987Vo01,1995Pi02](#) (continued)

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$^{27}\text{Al}$  Levels (continued)

excited states, except otherwise noted.  
@ From [1995Pi02](#).