

$^{240}\text{Pu}(\gamma, \gamma')$  **2012Qu03**

| Type            | Author   | History<br>Citation | Literature Cutoff Date |
|-----------------|----------|---------------------|------------------------|
| Full Evaluation | C. Morse | NDS 206,359 (2025)  | 27-Sep-2024            |

**2012Qu03:** 3-MeV electrons produced by Van de Graaff accelerator at High Voltage Research Laboratory at MIT. Bremsstrahlung produced by impinging electrons on 102- $\mu\text{m}$  gold foil on a 1-cm thick copper backing.  $^{240}\text{Pu}$  nuclear resonance fluorescence measured with target material contained in a 30- $\mu\text{m}$ -thick aluminum foil. Measured  $E_\gamma$ , deduced integrated cross section.

 $^{240}\text{Pu}$  Levels

| E(level) <sup>†</sup> | J $\pi$        | $\sigma$ (eV b) | E(level) <sup>†</sup> | J $\pi$ | $\sigma$ (eV b) | E(level) <sup>†</sup> | J $\pi$ | $\sigma$ (eV b) |
|-----------------------|----------------|-----------------|-----------------------|---------|-----------------|-----------------------|---------|-----------------|
| 0                     | 0 <sup>+</sup> |                 | 2433.16 23            | 1       | 103.7 91        | 2577.6 3              | 1       | 78 11           |
| 42.69 19              | 2 <sup>+</sup> |                 | 2464.10 25            | 1       | 42.7 56         | 2644.4 3              | 1       | 68 14           |
| 2155.7 3              | 1              | 34.4 57         | 2547.8 4              | 1       | 41.8 89         | 2736.4 3              | 1       | 61 13           |
| 2263.4 4              | 1              | 29.4 69         | 2566.2 3              | 1       | 75.2 98         |                       |         |                 |

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

 $\gamma(^{240}\text{Pu})$ 

| $E_\gamma$ | $E_i(\text{level})$ | J $\pi_i$ | $E_f$ | J $\pi_f$      | Comments                                                                                 |
|------------|---------------------|-----------|-------|----------------|------------------------------------------------------------------------------------------|
| 2113.1 6   | 2155.7              | 1         | 42.69 | 2 <sup>+</sup> |                                                                                          |
| 2155.6 4   | 2155.7              | 1         | 0     | 0 <sup>+</sup> |                                                                                          |
| 2221.3 8   | 2263.4              | 1         | 42.69 | 2 <sup>+</sup> |                                                                                          |
| 2263.3 4   | 2263.4              | 1         | 0     | 0 <sup>+</sup> |                                                                                          |
| 2390.4 3   | 2433.16             | 1         | 42.69 | 2 <sup>+</sup> |                                                                                          |
| 2421.2 4   | 2464.10             | 1         | 42.69 | 2 <sup>+</sup> |                                                                                          |
| 2433.2 3   | 2433.16             | 1         | 0     | 0 <sup>+</sup> |                                                                                          |
| 2464.2 3   | 2464.10             | 1         | 0     | 0 <sup>+</sup> | $E_\gamma$ : Possibly attributable to $^{239}\text{Pu}$ , see <a href="#">2008Be31</a> . |
| 2505.3 4   | 2547.8              | 1         | 42.69 | 2 <sup>+</sup> |                                                                                          |
| 2523.3 4   | 2566.2              | 1         | 42.69 | 2 <sup>+</sup> |                                                                                          |
| 2534.9 4   | 2577.6              | 1         | 42.69 | 2 <sup>+</sup> |                                                                                          |
| 2547.4 6   | 2547.8              | 1         | 0     | 0 <sup>+</sup> |                                                                                          |
| 2566.4 4   | 2566.2              | 1         | 0     | 0 <sup>+</sup> |                                                                                          |
| 2577.5 4   | 2577.6              | 1         | 0     | 0 <sup>+</sup> |                                                                                          |
| 2601.5 5   | 2644.4              | 1         | 42.69 | 2 <sup>+</sup> |                                                                                          |
| 2644.5 3   | 2644.4              | 1         | 0     | 0 <sup>+</sup> |                                                                                          |
| 2693.8 3   | 2736.4              | 1         | 42.69 | 2 <sup>+</sup> |                                                                                          |
| 2736.0 5   | 2736.4              | 1         | 0     | 0 <sup>+</sup> |                                                                                          |

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Level Scheme

