

**$^{83}\text{Ga}$   $\beta^-$  n decay    2010Wi03,2017Ve01**

| Type            | Author                | History             | Citation | Literature Cutoff Date |
|-----------------|-----------------------|---------------------|----------|------------------------|
| Full Evaluation | J. K. Tuli, E. Browne | NDS 157, 260 (2019) |          | 1-Mar-2019             |

Parent:  $^{83}\text{Ga}$ :  $E=0$ ;  $J^\pi=(5/2^-)$ ;  $T_{1/2}=308.1$  ms 10;  $Q(\beta^-n)=8087$  3;  $\% \beta^-n$  decay=62.8 25

$^{83}\text{Ga}$ - $T_{1/2}$ : From  $^{83}\text{Ga}$  Adopted Levels in ENSDF.

$^{83}\text{Ga}$ - $J^\pi$ : From systematics (2017Au03).

$^{83}\text{Ga}$ - $Q(\beta^-n)$ : From 2017Wa10.

$^{83}\text{Ga}$ - $\% \beta^-n$  decay:  $\% \beta^-n=62.8$  25 (2010Wi03).

2010Wi03, 2017Ve01:  $^{83}\text{Ga}$  from  $^{238}\text{U}(p,F)$ ,  $E=54$  MeV; products were accelerated to 225 MeV in the ORNL Tandem. Measured

$E\gamma$ ,  $I\gamma$ ,  $\gamma\gamma$ , (fragment) $\gamma$  coin (ion-tagged  $\gamma$ -ray spectra),  $\beta\gamma(\text{ion})$  coin,  $\beta n\gamma$  coin.

Earlier work: 2006Pe20 (also 2003Pe18).

 $^{82}\text{Ge}$  Levels

| E(level) <sup>†</sup> | $J^\pi$ <sup>‡</sup> | $T_{1/2}$ | Comments                         |
|-----------------------|----------------------|-----------|----------------------------------|
| 0.0                   | 0 <sup>+</sup>       | 4.50 s 7  | $T_{1/2}$ : From Adopted Levels. |
| 1347.7 2              | 2 <sup>+</sup>       |           |                                  |
| 2214.98 3             | (2 <sup>+</sup> )    |           |                                  |
| 2286.5 2              | 4 <sup>+</sup>       |           |                                  |
| 2333.0 4              | 0 <sup>+</sup>       |           |                                  |
| 2523.9 4              | (2 <sup>+</sup> )    |           |                                  |
| 2702.0 3              |                      |           |                                  |
| 2713.14 25            |                      |           |                                  |
| 2882.9 3              |                      |           |                                  |
| 3014.3 5              |                      |           |                                  |
| 3076.4 4              |                      |           |                                  |
| 3256.1 5              |                      |           |                                  |

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

<sup>‡</sup> From Adopted Levels.

 $\gamma(^{82}\text{Ge})$ 

$I\gamma$  normalization: From measured absolute intensity for  $1348\gamma=28.4\%$  10  $^{83}\text{Ga}$  decay (2010Wi03).

| $E_\gamma$ <sup>†</sup> | $I_\gamma$ <sup>†‡</sup> | $E_i(\text{level})$ | $J_i^\pi$         | $E_f$  | $J_f^\pi$      | Comments                                |
|-------------------------|--------------------------|---------------------|-------------------|--------|----------------|-----------------------------------------|
| 416.0 4                 | 0.9 2                    | 2702.0              |                   | 2286.5 | 4 <sup>+</sup> |                                         |
| 596.4 2                 |                          | 2882.9              |                   | 2286.5 | 4 <sup>+</sup> | $E_\gamma$ : Observed only in 2010Wi03. |
| 727.8 4                 | 1.6 4                    | 3014.3              |                   | 2286.5 | 4 <sup>+</sup> | $E_\gamma$ : Observed only in 2010Wi03. |
| 867.2 2                 | 3.7 8                    | 2214.98             | (2 <sup>+</sup> ) | 1347.7 | 2 <sup>+</sup> |                                         |
| 938.8 1                 | 11.3 3                   | 2286.5              | 4 <sup>+</sup>    | 1347.7 | 2 <sup>+</sup> |                                         |
| 985.3 3                 | 2.3 3                    | 2333.0              | 0 <sup>+</sup>    | 1347.7 | 2 <sup>+</sup> |                                         |
| 1176.2 3                | 3.3 4                    | 2523.9              | (2 <sup>+</sup> ) | 1347.7 | 2 <sup>+</sup> |                                         |
| 1348.42 12              | 100.0 8                  | 1347.7              | 2 <sup>+</sup>    | 0.0    | 0 <sup>+</sup> |                                         |
| 1354.1 2                | 2.2 10                   | 2702.0              |                   | 1347.7 | 2 <sup>+</sup> |                                         |
| 1365.4 2                | 4.3 6                    | 2713.14             |                   | 1347.7 | 2 <sup>+</sup> |                                         |
| 1727.6 4                | 1.4 2                    | 3076.4              |                   | 1347.7 | 2 <sup>+</sup> | $E_\gamma$ : Observed only in 2017Ve01. |
| 1908.4 4                | 0.3 3                    | 3256.1              |                   | 1347.7 | 2 <sup>+</sup> | $E_\gamma$ : Observed only in 2017Ve01. |
| 2214.87 3               | 7.5                      | 2214.98             | (2 <sup>+</sup> ) | 0.0    | 0 <sup>+</sup> |                                         |
| 2713.1 5                | 1.8 3                    | 2713.14             |                   | 0.0    | 0 <sup>+</sup> |                                         |
| 3076.0                  | 0.6 4                    | 3076.4              |                   | 0.0    | 0 <sup>+</sup> | $E_\gamma$ : Observed only in 2017Ve01. |

Continued on next page (footnotes at end of table)

---

 $^{83}\text{Ga} \beta^- \text{n decay}$  [2010Wi03](#), [2017Ve01](#) (continued)

---

 $\gamma(^{82}\text{Ge})$  (continued)

---

<sup>†</sup> Weighted average of values in [2010Wi03](#) and [2017Ve01](#), unless otherwise specified.

<sup>‡</sup> For absolute intensity per 100 decays, multiply by 0.284 *IO*.

---

 $\text{Delayed Neutrons } (^{82}\text{Ge})$ 

---

| $E(^{82}\text{Ge})$ | $I(n)^{\dagger\ddagger}$ | Comments                                                                                                                |
|---------------------|--------------------------|-------------------------------------------------------------------------------------------------------------------------|
| 0.0                 | <35                      | Listed as <32 3 in <a href="#">2010Wi03</a> (upper limit is given to reflect potentially unobserved transitions). Other |
| 1347.7              | 19.6 8                   |                                                                                                                         |
| 2214.98             | 3.52 22                  |                                                                                                                         |
| 2286.5              | 1.42 22                  |                                                                                                                         |
| 2333.0              | 0.59 12                  |                                                                                                                         |
| 2523.9              | 1.01 16                  |                                                                                                                         |
| 2702.0              | 1.39 25                  |                                                                                                                         |
| 2713.14             | 1.88 15                  |                                                                                                                         |
| 2882.9              | 1.00 10                  |                                                                                                                         |
| 3014.3              | 0.54 10                  |                                                                                                                         |

<sup>†</sup> From [2010Wi03](#).

<sup>‡</sup> Absolute intensity per 100 decays.

<sup>83</sup>Ga β<sup>-</sup>n decay 2010Wi03,2017Ve01

Decay Scheme

