## Adopted Levels, Gammas

| Type | Author | History Citation | Literature Cutoff Date |
|---|---|---|---|
| Full Evaluation | D. De Frenne | NDS 110,1745 (2009) | 31-Dec-2008 |

Q($\beta^-$)=10420 *10*; S(n)=4178 *9*; S(p)=1.290×10$^4$ *8*; Q($\alpha$)=−9280 *6* 2012Wa38
Note: Current evaluation has used the following Q record 9850 70505e$^+$1 *131*.377E4 15-1.001E410 2003Au03.

### $^{102}$Y Levels

From 2007Ch07: $\mu$=+2.34 *5* for $J^\pi$=(2) and $\mu$=+2.68 *1* for $J^\pi$=(3). The spectroscopic electric quadrupole moment Q(s)=+1.17 *13* for $J^\pi$=(2) and Q(s)=+1.36 *16* for $J^\pi$=(3).

Cross Reference (XREF) Flags

A $^{102}$Sr $\beta^-$ decay

| E(level)[†] | $J^\pi$[‡] | $T_{1/2}$ | XREF | Comments |
|---|---|---|---|---|
| 0.0+x | HIGH J | 0.36 s *4* | A | %$\beta^-$=100; %$\beta^-$n=4.9 *12*<br>%$\beta^-$n: weighted average of 6.0 *17* (1986ReZS) and 4.0 *15* (1996Me09). Should be considered as a combined value for both isomers.<br>E(level): from systematics in lighter Y isotopes, two $^{102}$Y isomers are expected. Experimental evidence for the existence of two isomers is based on a different I(152$\gamma$)/I(326$\gamma$) ratio obtained in the studies of 1983Sh13 and 1988HiZQ. $J^\pi$ probably high because production method via $^{235}$U(n,F) favors high-spin isomer. Th high spin isomer is directly produced in the fission reaction. See also general comment.<br>$T_{1/2}$: from 1983Sh13, $\gamma$(t). Contamination of $T_{1/2}$ by low-spin isomer cannot be excluded. Others: 0.27 s *7* (1981HiZX), 0.5 s *1*, $\beta^-$ delayed neutron decay (1980KrZY). 0.44 s *6* (1986ReZS). 0.9 s *3* (1974GrZN) is probably incorrect. |
| 0.0+y | LOW J | 0.298 s *9* | A | %$\beta^-$=100; %$\beta^-$n=4.9 *12*<br>%$\beta^-$n: weighted average of 6.0 *17* (1986ReZS) and 4.0 *15* (1996Me09) should be considered as a combined value for both isomers.<br>E(level): the assignment based on mass-separated samples of A=102 produced in $^{235}$U(n,F) with $^{102}$Sr as major activity. As a consequence primarily the decay of the low-spin isomer of $^{102}$Y is fed in the $\beta^-$ decay of $^{102}$Sr and as such indirectly produced.<br>$T_{1/2}$: Weighted average of 0.30 s *6* (1991Hi02) and 0.29 s *2* (1996Me09). Slight contamination of $T_{1/2}$ by high-spin isomer cannot be excluded. Other: 0.44 s *6* (1986ReZS). |
| 93.80+y *6* | | | A | |
| 208.23+y *9* | | | A | |
| 243.85+y *6* | 1$^+$ | | A | |
| 311.70+y *9* | | | A | |
| 497.81+y *10* | | | A | |
| 645.4+y? *4* | | | A | |
| 898.63+y *22* | | | A | |
| 1347.92+y *14* | 1$^+$ | | A | |
| 1689.58+y *15* | 1$^+$ | | A | |

[†] From $^{102}$Sr $\beta^-$ decay. As $J^\pi$=0$^+$ for $^{102}$Sr g.s., very likely the lowest level observed in the $\beta^-$ decay of $^{102}$Sr is the low-spin isomer of $^{102}$Y. The energies of the observed levels are referred to the excitation energy of the low-spin $^{102}$Y isomer However in a recent paper of (2007Ch07) 2 states with J=(2) and (3) are mentioned. No high spin state mentioned. So new experiments

Continued on next page (footnotes at end of table)

## Adopted Levels, Gammas (continued)

### $^{102}$Y Levels (continued)

needed to solve that problem of isomerism. That means that the results given here should be treated with great caution.

‡ Based on log *ft* in $^{102}$Sr $\beta$-decay which indicates allowed $\beta$ transition. $J^\pi=1^+$ from log $ft<4.5$.

### $\gamma(^{102}Y)$

| $E_i$(level) | $J^\pi_i$ | $E_\gamma$ † | $I_\gamma$ † | $E_f$ | $J^\pi_f$ |
|---|---|---|---|---|---|
| 93.80+y | | 93.89 *8* | 100 | 0.0+y | LOW J |
| 208.23+y | | 114.46 *15* | 32 *3* | 93.80+y | |
| | | 208.16 *13* | 100 *7* | 0.0+y | LOW J |
| 243.85+y | $1^+$ | 35.58 *18* | 1.0 *4* | 208.23+y | |
| | | 150.15 *10* | 34.0 *18* | 93.80+y | |
| | | 243.80 *8* | 100 *5* | 0.0+y | LOW J |
| 311.70+y | | 67.89 *14* | 100 *6* | 243.85+y | $1^+$ |
| | | 103.40 *20* | 12.1 *20* | 208.23+y | |
| | | 217.92 *15* | 47 *4* | 93.80+y | |
| | | 311.60 *20* | 18 *3* | 0.0+y | LOW J |
| 497.81+y | | 186.15 *15* | 29.4 *29* | 311.70+y | |
| | | 253.95 *15* | 100 *6* | 243.85+y | $1^+$ |
| | | 404.20 *20* | 4.6 *21* | 93.80+y | |
| | | 498.4 *6* | 7 *4* | 0.0+y | LOW J |
| 645.4+y? | | 437.2 *3* | 100 | 208.23+y | |
| 898.63+y | | 655.1 *3* | 95 *21* | 243.85+y | $1^+$ |
| | | 804.5 *3* | 100 *24* | 93.80+y | |
| 1347.92+y | $1^+$ | 850.40 *20* | 35 *6* | 497.81+y | |
| | | 1036.00 *20* | 74 *9* | 311.70+y | |
| | | 1104.00 *20* | 100 *11* | 243.85+y | $1^+$ |
| 1689.58+y | $1^+$ | 1191.80 *20* | 100 *12* | 497.81+y | |
| | | 1378.1 *3* | 38 *10* | 311.70+y | |
| | | 1445.5 *3* | 36 *8* | 243.85+y | $1^+$ |
| | | 1689.4 *4* | 18 *6* | 0.0+y | LOW J |

† From $^{102}$Sr $\beta^-$ decay.

**Adopted Levels, Gammas**

Level Scheme

Intensities: Type not specified