## Coulomb excitation 2012Di13

History

| Type | Author | Citation | Literature Cutoff Date |
|---|---|---|---|
| Full Evaluation | S. Kumar(a), J. Chen(b) and F. G. Kondev | NDS 137, 1 (2016) | 31-May-2016 |

2012Di13: E=2.87 MeV/nucleon $^{109}$Sn radioactive beam was produced at the REX-ISOLDE facility at CERN by bombarding a 27 g/cm$^2$ $LaC_x$ target with a 1.4-GeV proton beam with a maximum intensity of about $3\times10^{13}$ protons per pulse. The secondary target is 99.93% isotopically enriched $^{58}$Ni. Scattered particles were detected by a double-sided silicon strip detector (DSSSD) and $\gamma$ rays were detected by the MINIBALL $\gamma$-ray detector array. Measured E$\gamma$, I$\gamma$, reaction yields, particle-$\gamma$-coin. Deduced levels, $J^\pi$, B(E2) using the GOSIA2 code. Comparison with shell-model calculations.

### $^{109}$Sn Levels

| E(level)[†] | $J^\pi$[‡] | Comments |
|---|---|---|
| 0.0 | $5/2^+$ | |
| 14 | $7/2^+$ | |
| 664.5 | $(3/2^+)$ | B(E2)↑=0.013 *+8−11* |
| 678.7 | $5/2^+$ | B(E2)↑<0.012 |
| 925.4 | $(3/2)^+$ | B(E2)↑=0.029 *+14−15* |
| 991.1 | $1/2^+$ | B(E2)↑<0.028 |
| | | $J^\pi$: from 2012Di13; $(3/2)^+$ in Adopted Levels. |
| 1078 | $(7/2)^+$ | B(E2)↑=0.060 *+20−22* |
| 1240 | $9/2^+$ | B(E2)↑=0.085 *+32−34* |

[†] Rounded values from Adopted Levels.
[‡] From Adopted Levels, unless otherwise.

### $\gamma(^{109}Sn)$

| E$\gamma$ | I$\gamma$ | E$_i$(level) | $J_i^\pi$ | E$_f$ | $J_f^\pi$ |
|---|---|---|---|---|---|
| 664[†] | 0.82[†] *8* | 664.5 | $(3/2^+)$ | 0.0 | $5/2^+$ |
| 665[†] | 0.82[†] *8* | 678.7 | $5/2^+$ | 14 | $7/2^+$ |
| 678 | 0.11 *6* | 678.7 | $5/2^+$ | 0.0 | $5/2^+$ |
| 925 | 0.60 *7* | 925.4 | $(3/2)^+$ | 0.0 | $5/2^+$ |
| 991 | 0.22 *6* | 991.1 | $1/2^+$ | 0.0 | $5/2^+$ |
| 1064[‡] | 0.93[‡] *10* | 1078 | $(7/2)^+$ | 14 | $7/2^+$ |
| 1078[‡] | 0.93[‡] *10* | 1078 | $(7/2)^+$ | 0.0 | $5/2^+$ |
| 1240 | 0.72 *8* | 1240 | $9/2^+$ | 0.0 | $5/2^+$ |

[†] Not resolved; combined intensity is listed for 664$\gamma$+665$\gamma$.
[‡] Not resolved; combined intensity is listed for 1064$\gamma$+1078$\gamma$ and may also contain a contribution from a 1062$\gamma$.

**Coulomb excitation 2012Di13**

Level Scheme

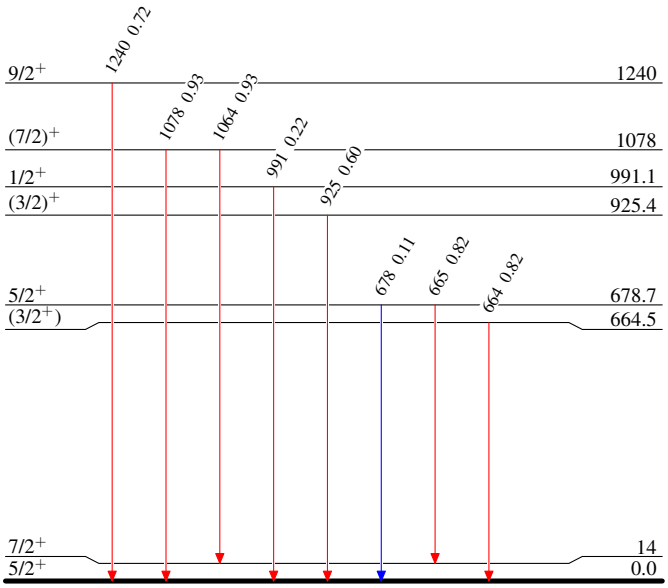
Intensities: Relative $I_\gamma$

Legend

$I_\gamma < 2\% \times I_\gamma^{max}$

$I_\gamma < 10\% \times I_\gamma^{max}$

$I_\gamma > 10\% \times I_\gamma^{max}$




$^{109}_{50}Sn_{59}$