## $^{208}$Pb(p,$\gamma$) 2004Li58

History

| Type | Author | Citation | Literature Cutoff Date |
|---|---|---|---|
| Full Evaluation | J. Chen # and F. G. Kondev | NDS 126, 373 (2015) | 30-Sep-2013 |

2004Li58: E=11.3-14.8 MeV protons were produced from the Separated Sector Cyclotron at iThemba LABS. A 1 mg/cm$^2$ enriched $^{208}$Pb target on a thick carbon backing was used. Beam energies were measured by time-of-flight of protons and $\gamma$-rays were detected using AFRODITE Ge detector array of eight Ge clover detectors surrounded by BGO anti-Compton shields. Measured E$\gamma$, I$\gamma$, $\gamma\gamma$, excitation functions. Deduced levels, $J^\pi$. Proton captures into single-particle states in $^{209}$Bi.

Others:

2006Li17: E=14.8, 15.7, 16.9 MeV. Measured E$\gamma$, I$\gamma$, $\gamma\gamma$. AFRODITE array at iThemba LABS. Deduced excitation functions. Proton capture to continuum states in $^{209}$Bi.

2006Li05: E=11-17 MeV. Measured E$\gamma$, I$\gamma$. AFRODITE array.

1987Ra23: E=7-9 MeV. Measured absolute thick target $\gamma$ yield.

### $^{209}$Bi Levels

| E(level)† | J$^\pi$‡ |
|---|---|
| 0.0 | 9/2$^-$ |
| 896 | 7/2$^-$ |
| 1609 | 13/2$^+$ |
| 2826 | 5/2$^-$ |
| 3120 | 3/2$^-$ |
| 3633 | 1/2$^-$ |
| 4418 | 1/2$^-$ |

† Round-off values from a least-squares fit to $\gamma$-ray energies by assuming $\Delta E\gamma$=1 keV.

‡ From comparisons of the experimental excitation functions with the theoretical predictions of the direct-semi-direct model (DSD) (2004Li58).

### $\gamma$($^{209}$Bi)

| E$_\gamma$† | E$_i$(level) | J$_i^\pi$ | E$_f$ | J$_f^\pi$ |
|---|---|---|---|---|
| 513 | 3633 | 1/2$^-$ | 3120 | 3/2$^-$ |
| 896 | 896 | 7/2$^-$ | 0.0 | 9/2$^-$ |
| 1298 | 4418 | 1/2$^-$ | 3120 | 3/2$^-$ |
| 1609 | 1609 | 13/2$^+$ | 0.0 | 9/2$^-$ |
| 1930 | 2826 | 5/2$^-$ | 896 | 7/2$^-$ |
| 2224 | 3120 | 3/2$^-$ | 896 | 7/2$^-$ |
| 2826 | 2826 | 5/2$^-$ | 0.0 | 9/2$^-$ |

† From 2004Li58, no uncertainties are given by the authors.

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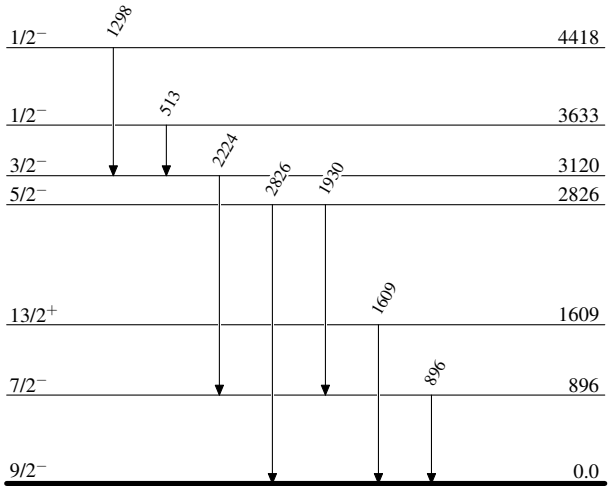
Level Scheme




$^{209}_{83}Bi_{126}$