

(HI,xn γ) [1985Lu06](#),[1986Ma39](#),[1989OgZY](#)

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Jun Chen	NDS 146, 1 (2017)	30-Sep-2017

Data from ¹⁰⁶Cd(³⁵Cl,3p γ) ([1994Pa27](#)) and ¹⁰⁴Pd(³⁷Cl,2n γ) ([1987Pa30](#)) are in separate datasets. Data from all other (HI,xn γ) measurements are included here.

[1986Ma39](#): ¹⁰⁷Ag(³⁵Cl,2n2p γ) E=155 MeV ³⁵Cl beam was produced from JAERI tandem pelletron. Charged-particles were detected with a Si-Box, γ rays were detected with two HPGe detectors and neutrons were detected with an NE213 neutron counter. Measured E γ , I γ , $\gamma\gamma$ -coin. Deduced levels, half-lives using recoil-distance method (RDM). Comparisons with shell-model calculations.

[1985Lu06](#): ¹¹⁰Cd(³²S,2n2p γ) E=143 MeV ³²S beam was produced from the Tandem XTU accelerator of the Legnaro National Laboratories. γ rays were detected with a HPGe detector and a multiplicity filter of six NaI detectors. Measured E γ , I γ , $\gamma\gamma$ -coin. Deduced levels, half-lives using recoil-distance method (RDM).

[1989OgZY](#): ¹⁰⁷Ag(³⁵Cl,2n2p γ) ³⁵Cl beam was produced from JAERI 20-MV tandem accelerator. Charged-particles were detected with a Si-Box of ten silicon surface-barrier detectors and γ rays were detected with Ge detectors. Measured E γ , $\gamma\gamma$ -coin, $\gamma(\theta, H)$. Deduced g-factors using the time-integral perturbed angular distribution (IPAD).

Other measurements:

[1991FoZY](#): ⁹²Mo(⁵⁰Cr,4p γ) E=220 MeV; ¹⁰⁷Ag(³⁵Cl,2n α) E=160 MeV. Measured E γ , I γ , $\gamma\gamma$ -coin. Deduced levels, J, π , configuration, band structure.

[1986IsZU](#): ¹⁰⁷Ag(³⁵Cl,2n2p γ), preliminary values of g-factors.

[1984Lu07](#): ¹¹⁰Cd(³²S,2n2p γ) E=126-170 MeV, measured $\gamma(\theta)$, $\gamma\gamma$ -coin, $\gamma\gamma(t)$. Deduced levels, J, π , configuration.

[1985Li13](#): ⁹²Mo(⁵⁰Cr,4p γ) E=220,230 MeV, measured E γ , $\gamma\gamma$ -coin.

¹³⁸Sm Levels

E(level) [†]	J π [†]	T _{1/2}	Comments
0	0 ⁺	3.1 min 2	T _{1/2} : from Adopted Levels.
346.7	2 ⁺	40 ps 6	g=+0.35 (1989OgZY) T _{1/2} : weighted average of 33 ps 7 (1985Lu06) and 45 ps 6 (1986Ma39).
891.3	4 ⁺		
1576.8	6 ⁺		
2352.3	8 ⁺		
2904.7	10 ⁺	0.55 ns 3	g \approx +1 (1989OgZY). T _{1/2} : weighted average of 0.73 ns 13 (1985Lu06) and 0.55 ns 2 (1986Ma39).
3261.3	12 ⁺	26 ps 4	T _{1/2} : weighted average of 23.6 ps 12 (1985Lu06) and 33 ps 2 (1986Ma39).
3918.1	14 ⁺		

[†] From Adopted Levels. Energies are rounded values.

$\gamma(^{138}\text{Sm})$

E γ [†]	E _i (level)	J π _i	E _f	J π _f	Mult. [†]
346.7	346.7	2 ⁺	0	0 ⁺	E2
356.4	3261.3	12 ⁺	2904.7	10 ⁺	E2
544.4	891.3	4 ⁺	346.7	2 ⁺	E2
552.2	2904.7	10 ⁺	2352.3	8 ⁺	E2
656.7	3918.1	14 ⁺	3261.3	12 ⁺	E2
685.6	1576.8	6 ⁺	891.3	4 ⁺	E2
775.2	2352.3	8 ⁺	1576.8	6 ⁺	E2

[†] From Adopted Gammas. Energies are rounded values. Values without uncertainties are given [1985Lu06](#) and [1986Ma39](#).

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Level Scheme

