^{139}I β^-n decay 1981Ho07

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

Parent: ^{139}I: E=0.0; J^π=(7/2$^+$); $T_{1/2}$=2.280 s *11*; Q(β^-n)=3430 *5*; %β^-n decay=10.0 *3*

^{139}I-J^π,$T_{1/2}$: From Adopted Levels of ^{139}I.

^{139}I-Q(β^-n): From 2017Wa10.

^{139}I-%β^-n decay: From Adopted Levels of ^{139}I.

1981Ho07: Source of ^{139}I ions were produced via volatile fission of ^{235}U deposited on a graphite cloth. Fission products were separated with the OSIRIS mass separator at the R2-O reactor at Studsvik. γ rays were detected with an 80 cm^3 Ge(Li) detector and delayed neutrons were detected with a neutron detector consisting of 30 parallel coupled ^{3}He detectors. Measured Eγ, Iγ, E_n, I_n. Deduced levels, decay branching ratios.

1997Gr20: measured E_n, I_n.

1974Ru07: measured neutrons. Spectra extends up to at least 1600 keV.

Others: 1985Ro13, 1980Al15, 1980Lu04, 1976Lu02, 1975As04, 1974Kr21, 1972Sc48.

^{138}Xe Levels

E(level)[†]	J^π[‡]
0.0	0$^+$
588.8 *4*	2$^+$
1072.4 *7*	(4$^+$)
1464.0 *4*	(2$^+$)

† From a least-squares fit to γ-ray energies, assuming $\Delta E\gamma$=0.5 keV.

‡ From Adopted Levels.

γ(^{138}Xe)

Iγ normalization: From Iγ(571γ ^{139}Xe)/I_n=0.81 *6* (1981Ho07).

All data are from 1981Ho07. 1985Ro13 observed a total of nine gammas in this decay but they do not list them.

E_γ	I_γ[†‡]	E_i(level)	J_i^π	E_f	J_f^π
483.6	21.4	1072.4	(4$^+$)	588.8	2$^+$
588.8	70.9	588.8	2$^+$	0.0	0$^+$
875.2	5.7	1464.0	(2$^+$)	588.8	2$^+$
1464.0	0.4	1464.0	(2$^+$)	0.0	0$^+$

† Relative intensity from 1981Ho07 assuming Iγ(571γ ^{139}Xe)=100. Iγ(571γ)/I_n=0.81 *6* (1981Ho07).

‡ For absolute intensity per 100 decays, multiply by 0.081 *7*.

Delayed Neutrons (^{138}Xe)

E(n)[†]	E(^{138}Xe)	I(n)[‡#]
130		
190		
290		
485		
565		

Continued on next page (footnotes at end of table)

^{139}I β^-n decay 1981Ho07 (continued)

Delayed Neutrons (continued)

E(n)[†]	E(^{138}Xe)	I(n)[‡#]
	0.0	42 *4*
	588.8	35 *3*
	1072.4	17.3 *13*
	1464.0	4.9 *8*

[†] Unplaced neutrons from 1974Ru07.
[‡] From 1981Ho07. Neutron feeding to levels above 1464 estimated to be less than 6% of β^-n decay (1981Ho07).
[#] For absolute intensity per 100 decays, multiply by 0.100 *3*.

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Decay Scheme

Intensities: I_γ per 100 parent decays