^{239}Cm ε decay 1952Ca42,1958Va37

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	E. Browne, J. K. Tuli	NDS 122, 293 (2014)	30-Jun-2013

Parent: ^{239}Cm: E=0; J^π=(7/2$^-$); $T_{1/2}$=2.7 h *8*; Q(ε)=1756 *54*; %ε+%$β^+$ decay=100.0

^{239}Cm-$T_{1/2}$,Q(g.s.) From ^{239}Cm Adopted Levels.

Additional information 1.

2008Qi03: ^{239}Cm was produced via the fusion reaction ^{232}Th(^{12}C,5n), E=70-74 MeV. Curium was chemically separated.
Measured Eγ, Iγ. Determined upper limit on α emission from ^{239}Cm: %α/%ε<0.00001.

The decay scheme is based on 2008Qi03, on unpublished results in 1952Ca42, 1958Va37, and ^{243}Bk α decay.

^{239}Am Levels

E(level)	J^π[†]
0	(5/2)$^-$
42	(7/2$^-$)
188	(5/2$^+$)

[†] From Adopted Levels.

ε,$β^+$ radiations

E(decay)	E(level)	Comments
(1.57×10^3 *6*)	188	Iε: ε feeding to g.s. ((5/2)$^-$) and 42-keV ((7/2$^-$)) level is expected. Log *ft*: Iε<100% yields log *ft*>6.3. This value is consistent with a 5/2$^+$,5/2[642] configuration assignment for this level. Similar transitions in neighboring nuclei have: log *ft*=6.59 in ^{239}Np (5/2$^+$,5/2[642]) $β^-$ decay to the 391-keV level (7/2$^-$,7/2[743]), log *ft*≤6.8 in ^{237}Pu (7/2$^-$,7/2[743]) ε Decay to ^{237}Np (g.s., 5/2$^+$,5/2[642]) Analogy to ^{237}Pu ε Decay suggests that ^{239}Cm ε Decay to ^{239}Am(g.s., 5/2$^-$,5/2[523]) should be≈12% (log *ft*=7.3), and to ^{239}Am(220 keV, 7/2$^+$,5/2[642]),≈9% (log *ft*=7.4).
(1.71×10^3 *6*)	42	
(1.76×10^3 *6*)	0	

γ(^{239}Am)

Iγ normalization: Measured in 2008Qi03.

E_γ	I_γ[‡#]	E_i(level)	J_i^π	E_f	J_f^π	Mult.	α[†]	Comments
42[@]		42	(7/2$^-$)	0	(5/2)$^-$			
146.4[@]	33	188	(5/2$^+$)	42	(7/2$^-$)	[E1]	0.215	Additional information 2.
188	100	188	(5/2$^+$)	0	(5/2)$^-$	[E1]	0.122	Additional information 3.

[†] Additional information 4.
[‡] From 2008Qi03.
[#] For absolute intensity per 100 decays, multiply by 0.36.
[@] Placement of transition in the level scheme is uncertain.

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Decay Scheme

Intensities: $I_{(\gamma+ce)}$ per 100 decays through this branch