^{257}Md α decay 1993Mo18

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	E. Browne, J. K. Tuli	NDS 114, 1041 (2013)	1-Mar-2012

Parent: ^{257}Md: E=0.0; J^{π}=(7/2$^-$); $T_{1/2}$=5.52 h *5*; Q(α)=7557.6 *10*; %α decay=15 *3*
^{257}Md-%α decay: from %ε of ^{257}Md determined by the ingrowth of ^{257}Fm α group (1993Mo18).
1993Mo18: ^{254}Es+^{18}O E(^{18}O)=105 MeV, ^{254}Es+^{22}Ne E(^{22}Ne)=126 MeV, ms ion chem. Measured α, γ, SF, $\alpha\gamma$.
Others: 1970Fi12, 1971Ho16.

^{253}Es Levels

The level scheme is that proposed by 1993Mo18.

E(level)[†]	J^{π}[†]	Comments
0.0[‡]	7/2$^+$	
46.3[‡] *3*	(9/2$^+$)	
80[‡] *8*	(11/2$^+$)	
106 *4*		Conversion electrons from γ-ray decay to the ground state of ^{253}Es have not been observed in ^{253}Fm ε decay. Thus, a 3/2-3/2[521] Nilsson state assignment (1993Mo18) to this level could not be confirmed.
139[#] *3*	(5/2$^-$)	
181.3[#] *5*	(7/2$^-$)	
371.4[@] *1*	(7/2$^-$)	
435[@] *2*	(9/2$^-$)	

[†] From 1993Mo18.
[‡] Band(A): Band 7/2$^+$[633].
[#] Band(B): Band 3/2$^-$[521].
[@] Band(C): Band 7/2$^-$[514].

α radiations

All data are from 1993Mo18.

Eα	E(level)	Iα[†#]	HF[‡]
7014 *6*	435	≈3.3	≈26
7074 *1*	371.4	95.4	1.6
7260 *2*	181.3	0.20 *5*	4.6×10^3 *15*
7303 *2*	139	0.25 *5*	5.4×10^3 *16*
7336 *3*	106	0.13 *9*	1.4×10^4 *10*
7361 *7*	80	0.10 *10*	2.3×10^4 *24*
7403 *6*	46.3	0.25 *19*	1.2×10^4 *10*
7440 *2*	0.0	0.36 *6*	1.29×10^4 *34*

[†] Intensity per 100 α decays.
[‡] $r_0(^{253}Es)$=1.495.
[#] For absolute intensity per 100 decays, multiply by 0.15 *3*.

^{257}Md α decay 1993Mo18 (continued)

γ(^{253}Es)

All data are from 1993Mo18.
K x ray(Es): I(Kα$_2$ x ray)/I(7074α)=0.034 *5*, I(Kα$_1$ x ray)/I(7074α)=0.055 *7*, I(Kβ$_{13}$ x ray)/I(7074α)=0.026 *6* (1993Mo18).
From level scheme I(K x ray)/I(7074α)=0.028, not in agreement with measured I(K x ray) (evaluators).

E_γ	I_γ[‡#]	E_i(level)	J_i^π	E_f	J_f^π	Mult.	α[†]	Comments
181.3 *5*	2.9 *8*	181.3	(7/2$^-$)	0.0	7/2$^+$	[E1]	0.1405 *22*	α(K)=0.1063 *17*; α(L)=0.0256 *4*; α(M)=0.00633 *10*; α(N+..)=0.00227 *4* α(N)=0.00175 *3*; α(O)=0.000445 *7*; α(P)=7.82×10^{-5} *12*; α(Q)=3.05×10^{-6} *5*
325.1 *2*	17.5 *21*	371.4	(7/2$^-$)	46.3	(9/2$^+$)	[E1]	0.0396	α(K)=0.0309 *5*; α(L)=0.00656 *10*; α(M)=0.001609 *23*; α(N+..)=0.000581 *9* α(N)=0.000445 *7*; α(O)=0.0001144 *16*; α(P)=2.09×10^{-5} *3*; α(Q)=9.45×10^{-7} *14*
371.4 *1*	82 *4*	371.4	(7/2$^-$)	0.0	7/2$^+$	[E1]	0.0302	α(K)=0.0237 *4*; α(L)=0.00491 *7*; α(M)=0.001202 *17*; α(N+..)=0.000434 *6* α(N)=0.000332 *5*; α(O)=8.56×10^{-5} *12*; α(P)=1.572×10^{-5} *22*; α(Q)=7.33×10^{-7} *11*
388.5 *15*	≈0.5	435	(9/2$^-$)	46.3	(9/2$^+$)	[E1]	0.0276 *5*	α(K)=0.0217 *4*; α(L)=0.00446 *8*; α(M)=0.001091 *18*; α(N+..)=0.000394 *7* α(N)=0.000301 *5*; α(O)=7.77×10^{-5} *13*; α(P)=1.431×10^{-5} *24*; α(Q)=6.74×10^{-7} *11*

[†] Additional information 1.
[‡] Relative to I(7074α)=100 *5*.
[#] For absolute intensity per 100 decays, multiply by 0.14 *3*.

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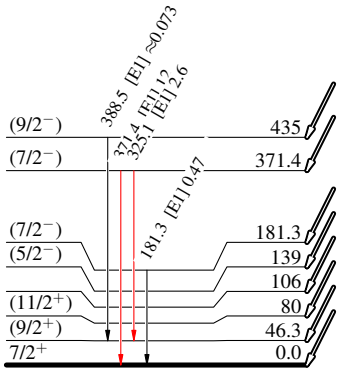
Decay Scheme

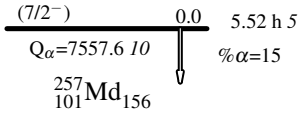
Intensities: $I_{(\gamma+ce)}$ per 100 parent decays

Legend

$I_\gamma < 2\% \times I_\gamma^{max}$
$I_\gamma < 10\% \times I_\gamma^{max}$
$I_\gamma > 10\% \times I_\gamma^{max}$



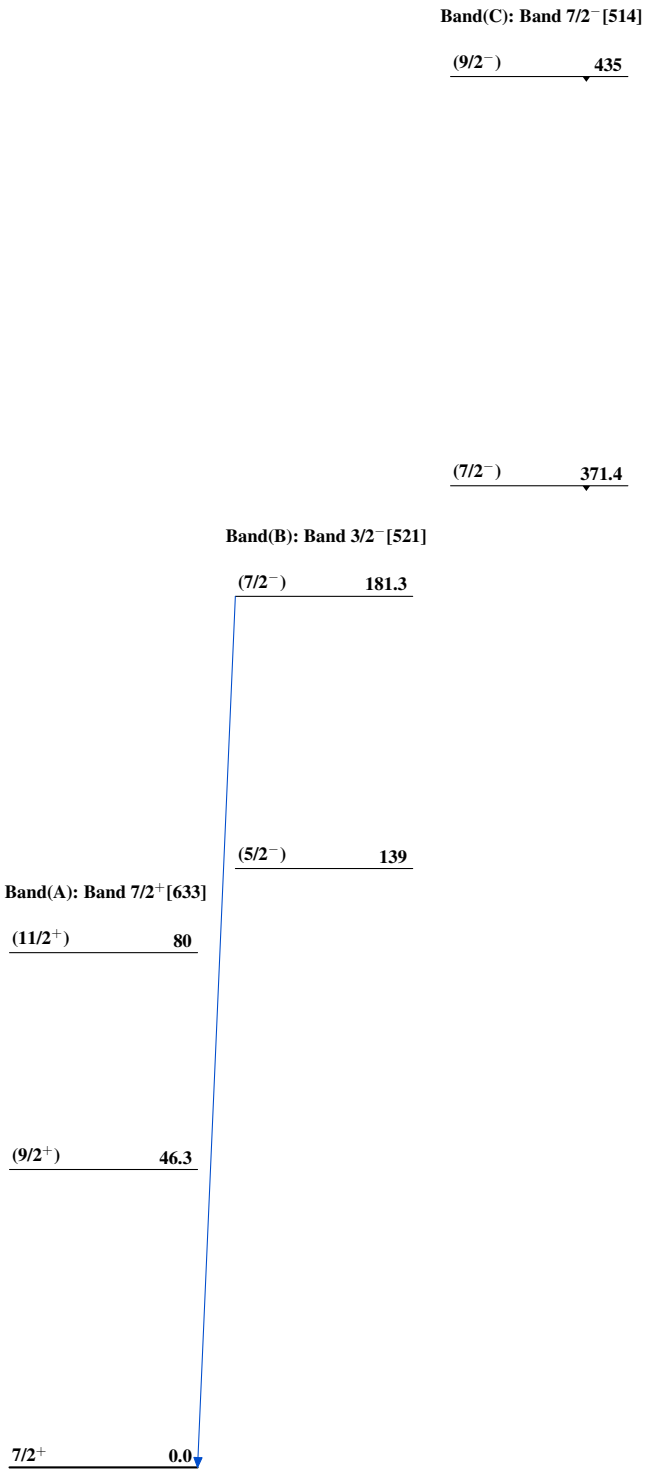
$^{253}_{99}Es_{154}$



$^{257}_{101}Md_{156}$

Eα	Iα	HF
7014	≈0.50	≈26
7074	14	1.6
7260	0.03	4600
7303	0.038	5400
7336	0.020	14000
7361	0.015	23000
7403	0.04	12000
7440	0.054	12900

^{257}Md α decay 1993Mo18



$^{253}_{99}Es_{154}$