^{252}No IT decay (109 ms) 2007Su19,2008Ro21

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	A. M. Mattera, S. Zhu, A. B. Hayes, E. A. Mccutchan	NDS 172, 543 (2021)	1-Jan-2021

Parent: ^{252}No: E=1254.4 *16*; $J^{\pi}=(8^-)$; $T_{1/2}$=109 ms *5*; %IT decay≈100.0

^{252}No-%IT decay: Cross section upper limits for SF decay and α decay modes were <4 nb and <0.1 nb, respectively (2007Su19).

2007Su19: ^{252}No isotope produced in the reaction ^{206}Pb(^{48}Ca,2nγ). E=173.6 MeV, 175.1 MeV and 177.0 MeV. The experiment was performed at GSI using the velocity filter SHIP. Products were implanted in Si strip detector. γ rays in prompt/delayed coincidence with particles detected in the Si detector were measured using a clover detector of four Ge crystals. Delayed γ-ray study used to observe the isomer. Search was also made for possible α particles from the 110-ms isomer.

2008Ro21: ^{252}No isotope produced in the reaction ^{206}Pb(^{48}Ca,2nγ), E= 217 MeV from the Argonne ATLAS accelerator facility. The fragment mass analyzer transmitted A=252 recoils into a DS Si-strip detector. γ rays were detected in prompt coincidence with isomeric electrons in two clover Ge detectors (4 crystals each). Measured: γ, α, α-γ coinc.

^{252}No Levels

E(level)[†]	J^{π}[‡]	$T_{1/2}$	Comments
0[#]	0^+	2.46 s *2*	$T_{1/2}$: from the Adopted Levels. %α,%SF: the results from 2007Su19 (%α=71 *3*, %SF=29 *2*) were not considered: not clear from the publication whether the value is a new result by the authors.
46.0[#] *10*	(2^+)		
153.2[#] *13*	(4^+)		
320.1[#] *15*	(6^+)		
544.4[#] *16*	(8^+)		
821.4[#] *19*	(10^+)		
929.0[@] *14*	(2^-)		
965.8?[@] *13*	(3^-)		
1014.3[@] *15*	(4^-)		
1073.5[@] *14*	(5^-)		
1147.3[@] *15*	(6^-)		
1149.4[#] *21*	(12^+)		E(level): Only identified in 2007Su19.
1229.6[@] *15*	(7^-)		
1254.4 *16*	(8^-)	109 ms *5*	Configuration=ν7/2[624]⊗ν9/2[734]. Population is ≈ 50% of that for the ground state (2007Su19). $T_{1/2}$: calculated as the weighted average of 110 ms *10* (2007Su19) and 109 ms *6* (2008Ro21).

[†] From a least-square fit to Eγ data, assuming Δ E_γ 1 keV.

[‡] From the Adopted Levels.

[#] Band(A): g.s. band.

[@] Band(B): Possible octupole band.

γ(^{252}No)

E_γ[†]	E_i(level)	J_i^{π}	E_f	J_f^{π}	Comments
(25)	1254.4	(8^-)	1229.6	(7^-)	
46	46.0	(2^+)	0	0^+	
107	153.2	(4^+)	46.0	(2^+)	identified as a doublet based on the width of the peak (2.3 keV), that is twice as large as the other lines in this energy range.
107[#]	1254.4	(8^-)	1147.3	(6^-)	E_γ: other: 106 keV (2008Ro21).
108	1073.5	(5^-)	965.8?	(3^-)	

Continued on next page (footnotes at end of table)

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$\gamma(^{252}No)$ (continued)

E_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	Comments
133	1147.3	(6^-)	1014.3	(4^-)		E_γ: other: 134 keV (2008Ro21).
156	1229.6	(7^-)	1073.5	(5^-)		
167	320.1	(6^+)	153.2	(4^+)		
224	544.4	(8^+)	320.1	(6^+)		
277	821.4	(10^+)	544.4	(8^+)		
328	1149.4	(12^+)	821.4	(10^+)		
685	1229.6	(7^-)	544.4	(8^+)		E_γ: other: 686 keV (2008Ro21).
710	1254.4	(8^-)	544.4	(8^+)		E_γ: other: 709 keV (2008Ro21).
827	1147.3	(6^-)	320.1	(6^+)		E_γ: other: 828 keV (2008Ro21).
861	1014.3	(4^-)	153.2	(4^+)		E_γ: other: 862 keV (2008Ro21).
883	929.0	(2^-)	46.0	(2^+)		
910	1229.6	(7^-)	320.1	(6^+)	(E1)	
920[#]	965.8?	(3^-)	46.0	(2^+)		E_γ: other: 921 keV (2008Ro21).
920	1073.5	(5^-)	153.2	(4^+)		E_γ: other: 921 keV (2008Ro21).

[†] From 2007Su19. Values from 2008Ro21 agree except where noted.
[‡] From 2007Su19, based on intensity balance.
[#] Placement of transition in the level scheme is uncertain.

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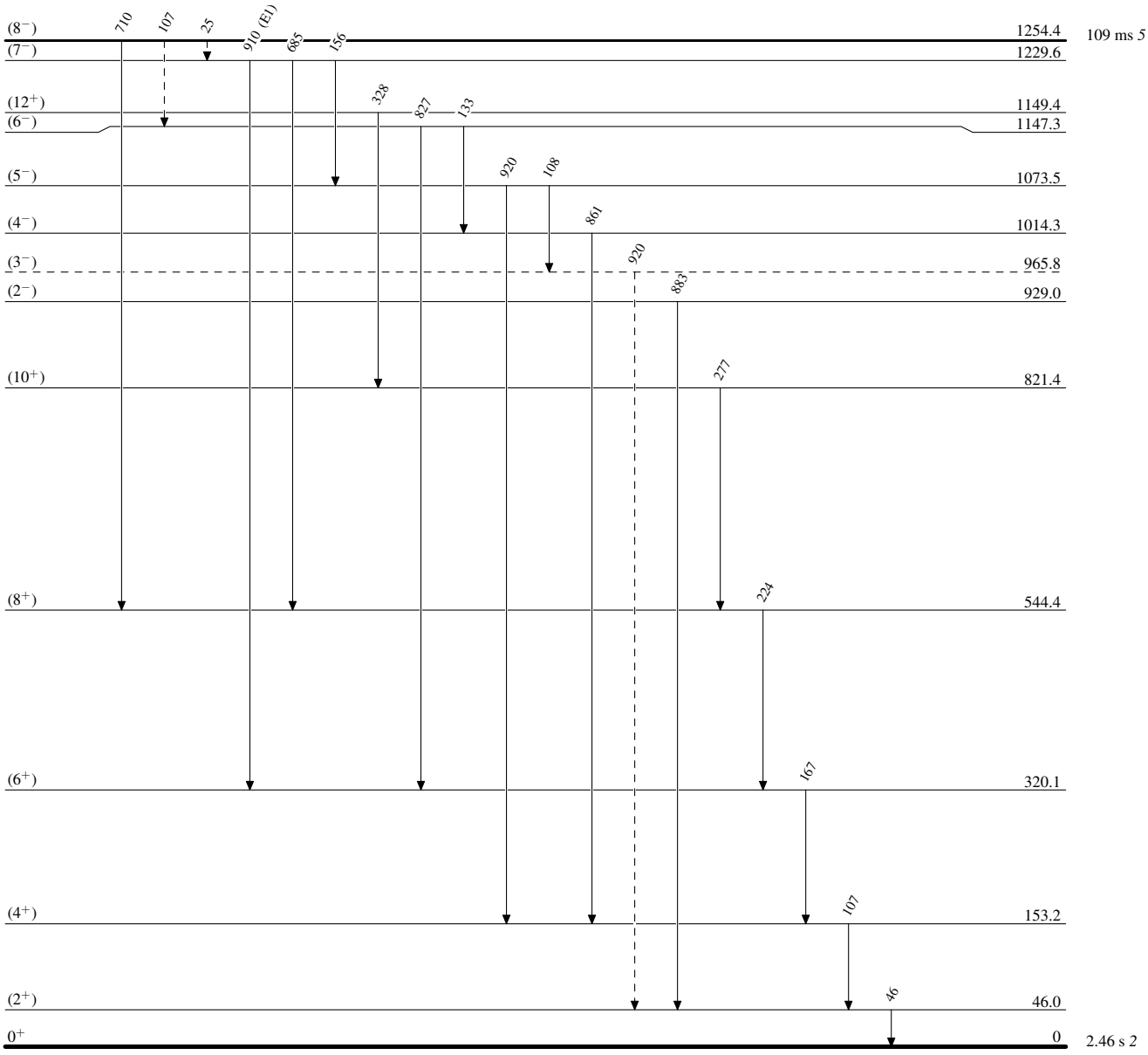
Legend

Decay Scheme

%IT≈100.0

γ Decay (Uncertain)



$^{252}_{102}No_{150}$

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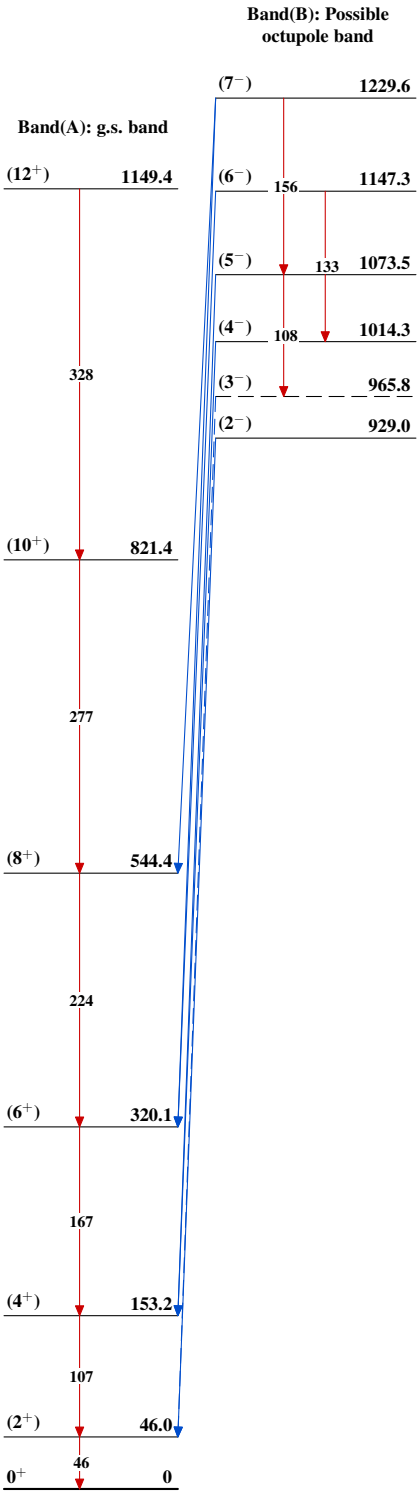

$^{252}_{102}No_{150}$