^{226}Ra(^{58}Ni,^{60}Niγ) 1989Po19

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh, Sukhjeet Singh	ENSDF	08-Mar-2022

E(^{58}Ni)=315 MeV; measured Eγ, Iγ, γ-coin, $\alpha\gamma(\theta)$ using POLYTESSA array of 22 escape-suppressed Ge detectors for γ rays, and two Si detectors for α particles at Daresbury accelerator facility. Deduced high-spin levels, J^π.

^{224}Ra Levels

E(level)[†]	J$^\pi$[‡]	Comments
0.0[#]	0^+	
84.4[#] *1*	2^+	
215.9[@] *1*	1^-	
250.7[#] *1*	4^+	
290.3[@] *1*	3^-	Intrinsic dipole moment=0.027 *3* (1989Po19).
433.00[@] *12*	(5^-)	Intrinsic dipole moment=0.040 *10* (1989Po19).
478.9[#] *2*	(6^+)	
640.7[@] *3*	(7^-)	Intrinsic dipole moment<0.05 (1989Po19).
754.6[#] *3*	(8^+)	Intrinsic dipole moment<0.11 (1989Po19).
906.0[@] *3*	(9^-)	Intrinsic dipole moment<0.08 (1989Po19).
1067.2[#] *4*	(10^+)	
1220.5[@] *4*	(11^-)	
1412.5[#] *4*	(12^+)	
1569.0[@] *5*	(13^-)	

[†] From least-squares fit to Eγ data.
[‡] From 1989Po19; based on ^{228}Th α-decay measurements (for levels with J≤4), level decay properties and band structure.
[#] Band(A): g.s. band.
[@] Band(B): Octupole band.

$\gamma(^{224}Ra)$

E$_i$(level)	J$_i^\pi$	E$_\gamma$	I$_\gamma$[†]	E$_f$	J$_f^\pi$	Mult.	α[‡]	Comments
84.4	2^+	84.4 *1*	100	0.0	0^+	E2	21.2 *4*	Mult.: from Adopted Gammas.
215.9	1^-	131.5 *1*	22.3 *3*	84.4	2^+			Iγ: Iγ(131.5)/Iγ(215.9)=0.287 *4* is in disagreement with 0.514 *6* from Adopted Gammas.
		215.9 *1*	77.7 *3*	0.0	0^+			Iγ: see comment for 131.5γ.
250.7	4^+	166.3 *1*	100	84.4	2^+	E2	1.167	A$_2$=+0.55 *6*; A$_4$=−0.48 *18* Mult.: from $\gamma(\theta)$ and RUL.
290.3	3^-	74.4 *1*	2.6 *6*	215.9	1^-			
		205.9 *1*	97.4 *6*	84.4	2^+	E1	0.0842	α(K)exp<0.19; α(L)exp<0.05; α(M)exp<0.014 Mult.: from α(K)exp, α(L)exp, α(M)exp estimates (1989Po19).
433.00	(5^-)	142.7 *1*	35 *12*	290.3	3^-			Iγ: Uncertainty of 12 in 142.7 and 182.3 γ rays confirmed in e-mail communication of June 12, 2014 from P. Butler.
		182.3 *1*	65 *12*	250.7	4^+			
478.9	(6^+)	228.2 *1*	100	250.7	4^+			
640.7	(7^-)	(161.8 *2*)	<30	478.9	(6^+)			
		207.7 *2*	85 *15*	433.00	(5^-)			

Continued on next page (footnotes at end of table)

^{226}Ra(^{58}Ni,^{60}Niγ) 1989Po19 (continued)

$\gamma(^{224}Ra)$ (continued)

E_i(level)	J_i^π	E_γ	I_γ †	E_f	J_f^π	E_i(level)	J_i^π	E_γ	I_γ †	E_f	J_f^π
754.6	(8^+)	113.9#	<10	640.7	(7^-)	1067.2	(10^+)	312.6 *2*	100	754.6	(8^+)
		275.7 *2*	95 *5*	478.9	(6^+)	1220.5	(11^-)	314.5 *2*	100	906.0	(9^-)
906.0	(9^-)	151.4#	<15	754.6	(8^+)	1412.5	(12^+)	345.3 *2*	100	1067.2	(10^+)
		265.3 *2*	93 *7*	640.7	(7^-)	1569.0	(13^-)	348.5# *2*		1220.5	(11^-)

† Absolute photon branching ratio.

‡ Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ-ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.

Placement of transition in the level scheme is uncertain.

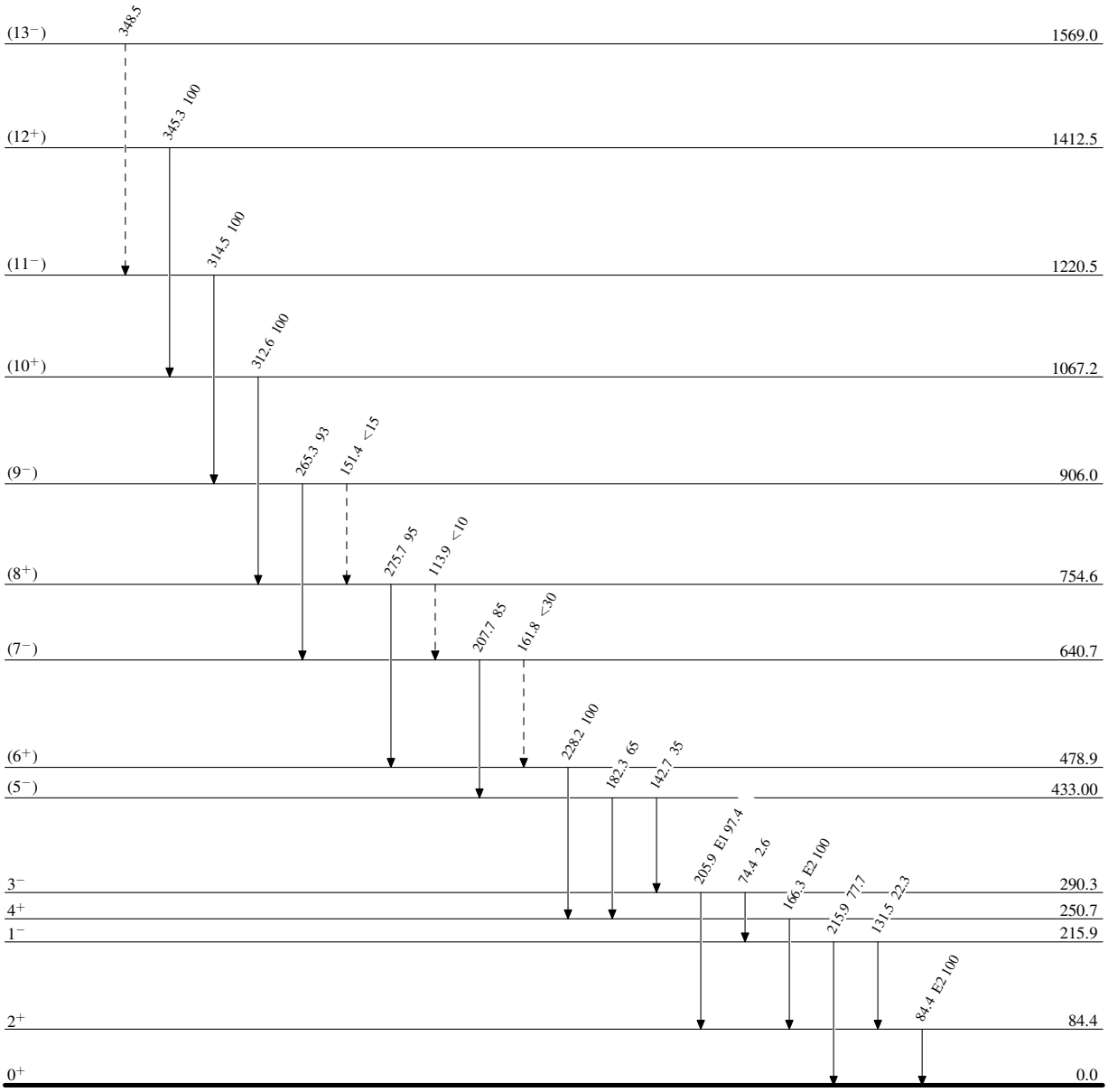
^{226}Ra(^{58}Ni,^{60}Niγ) **1989Po19**

Legend

Level Scheme

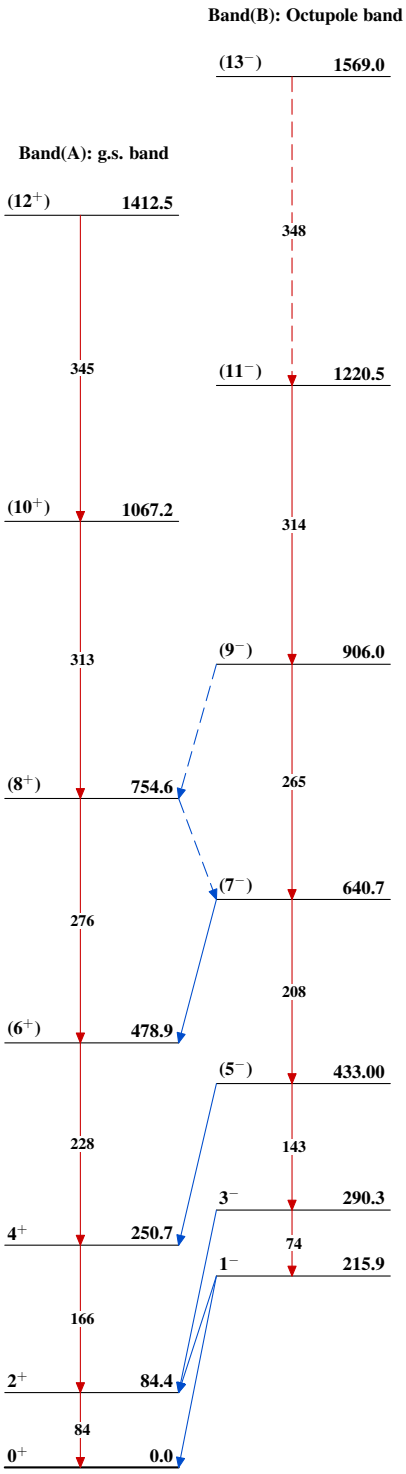
Intensities: % photon branching from each level

γ Decay (Uncertain)



$^{224}_{88}Ra_{136}$

^{226}Ra(^{58}Ni,^{60}Niγ) 1989Po19



$^{224}_{88}Ra_{136}$