^{248}Cm(^{209}Bi,^{210}Biγ) 2010Ta22

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	C. D. Nesaraja	NDS 125, 395 (2015)	31-Mar-2014

2010Ta22: Single-neutron transfer experiment was carried at the ATLAS facility of Argonne National Laboratory. A target of ^{248}Cm of 200 μg/cm^2 was bombarded with ^{209}Bi beam at energy of 1450 MeV. The target had a ≈50 mg/cm^2 Au substrate backing and a 200 μg/cm^2 Au foil in front. x-ray and γ coincidences along with cross coincidence with the 569 and 319 keV transition in ^{207}Pb and ^{210}Bi allowed unambiguous band assignments. The γ-rays were detected using the Gammasphere array with ≈100 compton suppressed Ge detectors. Measured Eγ, Iγ, $\gamma\gamma$, (x-ray)-γ coin and $\gamma\gamma\gamma$. High spin properties described in terms of the Woods-Saxon cranked shell model.

Others (Theoretical studies):

2011Zh03: Experimental high spin rotational bands observed in 2010Ta22 have been investigated using the cranked shell model (CSM) with the pairing correlations treated by particle number conserving (PNC) method. The experimental moment of inertia and alignments and variations with rotational frequency ω are reproduced well with these calculations.

^{247}Cm Levels

E(level)†	J$^\pi$	E(level)†	J$^\pi$	E(level)†	J$^\pi$	E(level)†	J$^\pi$
0‡	9/2$^-$	539.9‡ *14*	21/2$^-$	1468.8‡ *17*	33/2$^-$	2718.8‡ *23*	45/2$^-$
61.67# *5*	11/2$^-$	668.8# *14*	23/2$^-$	1656.8# *18*	35/2$^-$	2946.8# *25*	47/2$^-$
135.0‡ *10*	13/2$^-$	808.8‡ *14*	25/2$^-$	1854.8‡ *19*	37/2$^-$	3189‡ *3*	49/2$^-$
219.7# *10*	15/2$^-$	958.8# *15*	27/2$^-$	2057.8# *20*	39/2$^-$	3428# *3*	51/2$^-$
314.9‡ *13*	17/2$^-$	1119.8‡ *16*	29/2$^-$	2272.8‡ *21*	41/2$^-$		
421.8# *13*	19/2$^-$	1288.8# *16*	31/2$^-$	2488.8# *23*	43/2$^-$		

† From Eγ's, assuming 1 keV uncertainty for each Eγ.
‡ Band(A): ν9/2[734],α=+1/2.
# Band(a): ν9/2[734],α=−1/2.

γ(^{247}Cm)

E$_\gamma$	E$_i$(level)	J$^\pi_i$	E$_f$	J$^\pi_f$	Comments
61.67 *5*	61.67	11/2$^-$	0	9/2$^-$	E$_\gamma$: From Adopted Gammas.
(135 *1*)	135.0	13/2$^-$	0	9/2$^-$	
140 *1*	808.8	25/2$^-$	668.8	23/2$^-$	
150 *1*	958.8	27/2$^-$	808.8	25/2$^-$	
(158 *1*)	219.7	15/2$^-$	61.67	11/2$^-$	
161 *1*	1119.8	29/2$^-$	958.8	27/2$^-$	
169 *1*	1288.8	31/2$^-$	1119.8	29/2$^-$	E$_\gamma$: Spectral figure (Fig. 2) in 2010Ta22 indicates 170.
180 *1*	314.9	17/2$^-$	135.0	13/2$^-$	
180† *1*	1468.8	33/2$^-$	1288.8	31/2$^-$	
188 *1*	1656.8	35/2$^-$	1468.8	33/2$^-$	
198 *1*	1854.8	37/2$^-$	1656.8	35/2$^-$	
202 *1*	421.8	19/2$^-$	219.7	15/2$^-$	
225 *1*	539.9	21/2$^-$	314.9	17/2$^-$	
247 *1*	668.8	23/2$^-$	421.8	19/2$^-$	
269 *1*	808.8	25/2$^-$	539.9	21/2$^-$	
290 *1*	958.8	27/2$^-$	668.8	23/2$^-$	
311 *1*	1119.8	29/2$^-$	808.8	25/2$^-$	
330 *1*	1288.8	31/2$^-$	958.8	27/2$^-$	
349 *1*	1468.8	33/2$^-$	1119.8	29/2$^-$	
368 *1*	1656.8	35/2$^-$	1288.8	31/2$^-$	

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^{248}Cm(^{209}Bi,^{210}Biγ) 2010Ta22 (continued)

γ(^{247}Cm) (continued)

E_γ	E_i(level)	J_i^π	E_f	J_f^π
386 *1*	1854.8	37/2$^-$	1468.8	33/2$^-$
401 *1*	2057.8	39/2$^-$	1656.8	35/2$^-$
418 *1*	2272.8	41/2$^-$	1854.8	37/2$^-$
431 *1*	2488.8	43/2$^-$	2057.8	39/2$^-$
446 *1*	2718.8	45/2$^-$	2272.8	41/2$^-$
458 *1*	2946.8	47/2$^-$	2488.8	43/2$^-$
470 *1*	3189	49/2$^-$	2718.8	45/2$^-$
481† *1*	3428	51/2$^-$	2946.8	47/2$^-$

† Placement of transition in the level scheme is uncertain.

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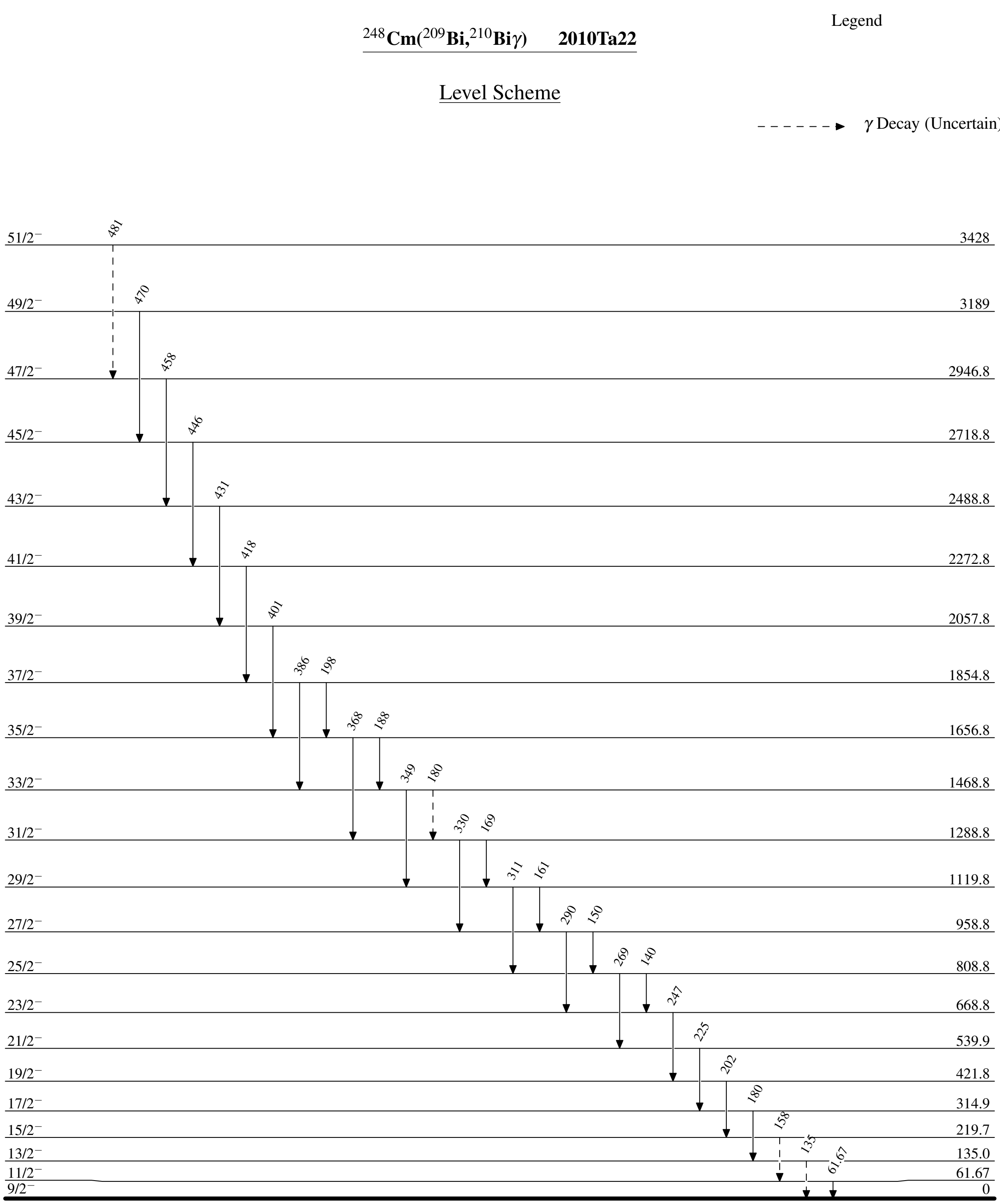
Level Scheme



$^{247}_{96}Cm_{151}$

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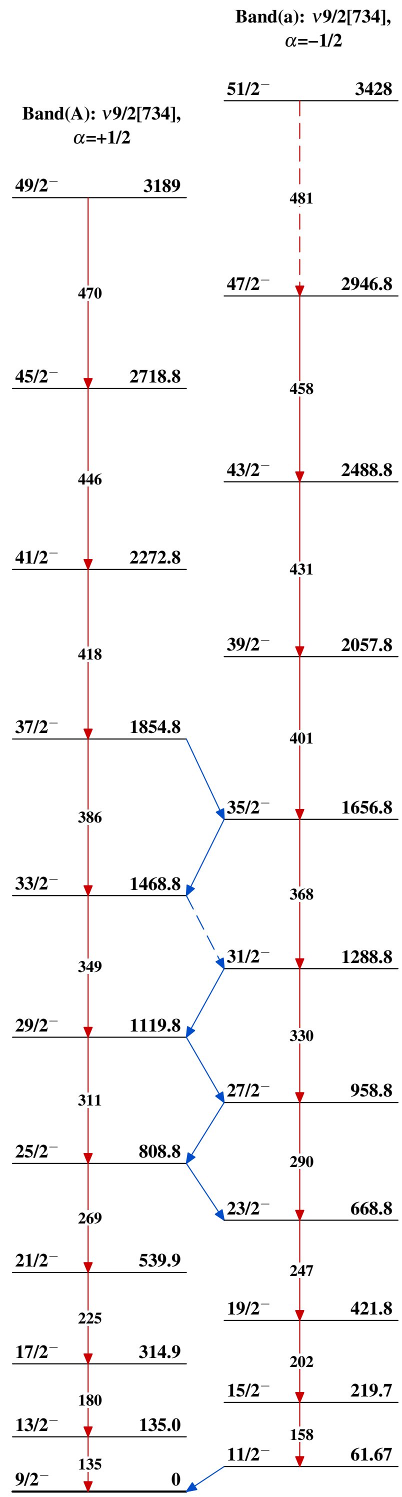

$^{247}_{96}Cm_{151}$