

²⁴⁴Pu(²⁰⁹Bi, ²⁰⁸Biγ) 2014Ho16

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	C. D. Nesaraja	NDS 189,1 (2023)	14-Feb-2023

2014Ho16: A ²⁰⁹Bi beam from ATLAS accelerator at energy of ≈15% above the Coulomb barrier bombarded the radioactive ²⁴⁴Pu target. To prevent contamination from the target chamber, the ²⁴⁴Pu target was sandwiched between layers of ¹⁹⁷Au, 150 μg/cm² in front and 50 mg/cm² in the back. Gammasphere array with 101 Compton-suppressed HPGe detectors was used for γ-ray detection. Measured: Eγ, Iγ, γγ, (x ray)γ coin. Deduced high-spin levels, J^π, bands, alignment plots, configurations, (g_K-g_R)/Q₀ ratios. Comparison with Woods-Saxon Cranked shell model calculations.

²⁴⁵Pu Levels

E(level) [†]	J ^π [‡]	Comments
0 [#]	9/2 ⁻	
60.5 [@] 10	11/2 ⁻	
137.5 [#] 10	13/2 ⁻	
194.0 ^a 10	7/2 ⁺	
222.9 [@] 12	15/2 ⁻	
251 ^{&} 4	9/2 ⁺	Additional information 1.
		E(level): No known γ rays from this level. Energy is from ²⁴⁴ Pu(d,p) dataset.
322.1 [#] 12	17/2 ⁻	
323.0 ^a 15	11/2 ⁺	
405.0 ^{&} 10	13/2 ⁺	
431.8 [@] 12	19/2 ⁻	
502.3 ^a 18	15/2 ⁺	
554.7 [#] 12	21/2 ⁻	
610.9 ^{&} 12	17/2 ⁺	
688.3 [@] 13	23/2 ⁻	
732.3 ^a 20	19/2 ⁺	
833.6 [#] 13	25/2 ⁻	
865.7 ^{&} 13	21/2 ⁺	
990.4 [@] 13	27/2 ⁻	
1010.9 ^a 21	23/2 ⁺	
1158.4 [#] 13	29/2 ⁻	
1167.6 ^{&} 14	25/2 ⁺	
1335.5 ^a 22	27/2 ⁺	
1336.7 [@] 14	31/2 ⁻	
1514.1 ^{&} 15	29/2 ⁺	
1526.0 [#] 14	33/2 ⁻	
1702.3 ^a 22	31/2 ⁺	
1724.3 [@] 15	35/2 ⁻	
1900.7 ^{&} 15	33/2 ⁺	
1933.8 [#] 15	37/2 ⁻	
2106.8 ^a 23	35/2 ⁺	
2150.8 [@] 16	39/2 ⁻	
2321.6 ^{&} 16	37/2 ⁺	
2377.7 [#] 16	41/2 ⁻	
2542.6 ^a 23	39/2 ⁺	
2608.3 [@] 16	43/2 ⁻	

Continued on next page (footnotes at end of table)

²⁴⁴Pu(²⁰⁹Bi, ²⁰⁸Bi γ) **2014Ho16** (continued)

²⁴⁵Pu Levels (continued)

E(level) [†]	J π [‡]	E(level) [†]	J π [‡]	E(level) [†]	J π [‡]	E(level) [†]	J π [‡]
2769.3 ^{&} 17	41/2 ⁺	2999.3 ^a 24	43/2 ⁺	3313.4 [#] 19	49/2 ⁻	3686.4 ^{&} 20	49/2 ⁺
2849.4 [#] 17	45/2 ⁻	3229.4 ^{&} 18	45/2 ⁺	3461 ^a 3	47/2 ⁺	3768.4 [#] 22	53/2 ⁻

[†] From least-squares fit to E γ data by the evaluator, with the 251-keV level energy kept fixed.

[‡] Provided by authors (2014Ho16) based on theoretical arguments and systematics.

[#] Band(A): $\nu 9/2[734], \alpha = +1/2$.

[@] Band(a): $\nu 9/2[734], \alpha = -1/2$.

[&] Band(B): $\nu 7/2[624], \alpha = +1/2$.

^a Band(b): $\nu 7/2[624], \alpha = -1/2$.

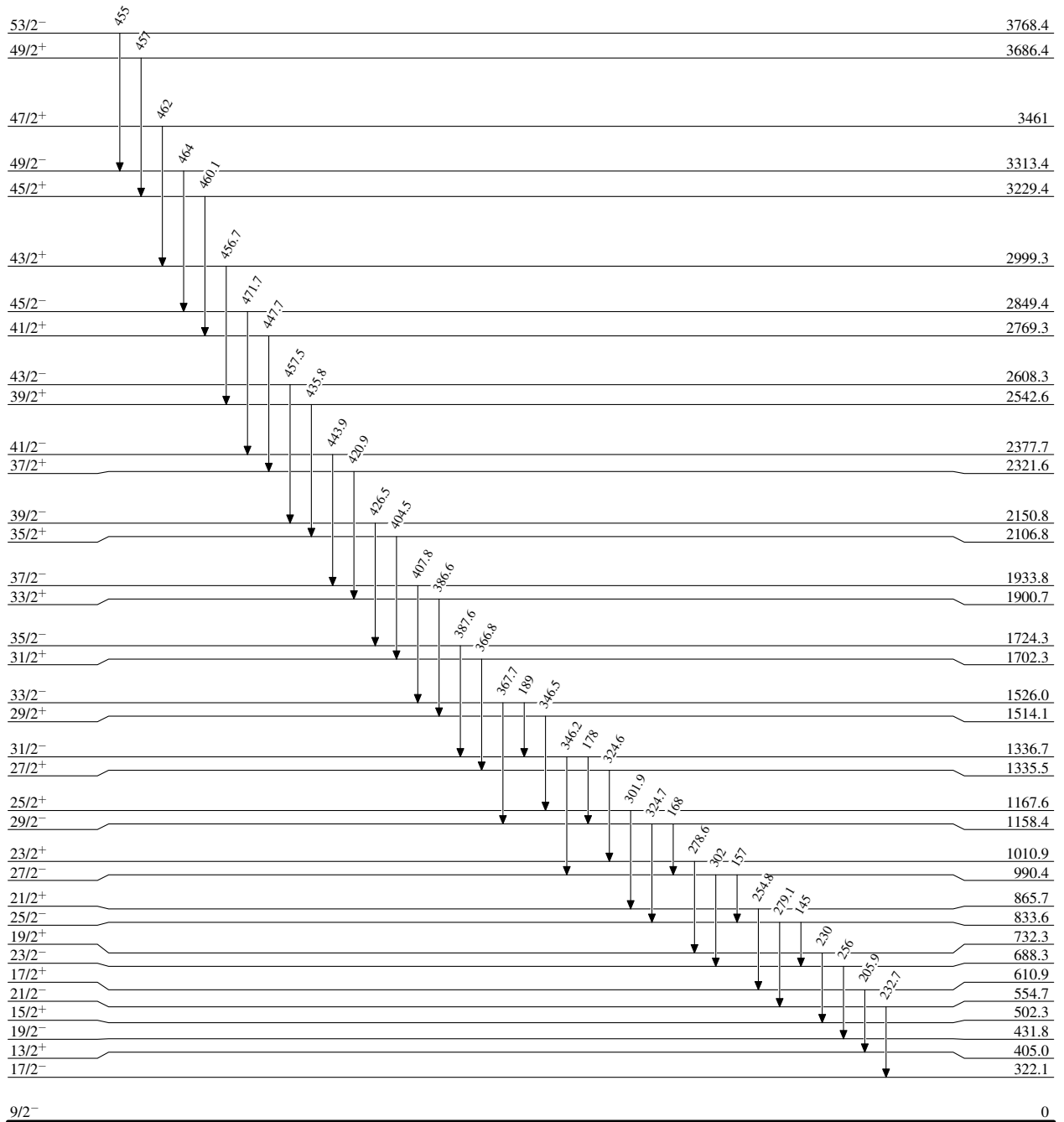
$\gamma(^{245}\text{Pu})$

E γ [†]	E _i (level)	J π _i	E _f	J π _f	E γ [†]	E _i (level)	J π _i	E _f	J π _f
(60 I)	60.5	11/2 ⁻	0	9/2 ⁻	324.6 5	1335.5	27/2 ⁺	1010.9	23/2 ⁺
(129 I)	323.0	11/2 ⁺	194.0	7/2 ⁺	324.7 5	1158.4	29/2 ⁻	833.6	25/2 ⁻
(138 I)	137.5	13/2 ⁻	0	9/2 ⁻	346.2 5	1336.7	31/2 ⁻	990.4	27/2 ⁻
145 I	833.6	25/2 ⁻	688.3	23/2 ⁻	346.5 5	1514.1	29/2 ⁺	1167.6	25/2 ⁺
154 I	405.0	13/2 ⁺	251	9/2 ⁺	366.8 5	1702.3	31/2 ⁺	1335.5	27/2 ⁺
157 I	990.4	27/2 ⁻	833.6	25/2 ⁻	367.7 5	1526.0	33/2 ⁻	1158.4	29/2 ⁻
(162 I)	222.9	15/2 ⁻	60.5	11/2 ⁻	386.6 5	1900.7	33/2 ⁺	1514.1	29/2 ⁺
168 I	1158.4	29/2 ⁻	990.4	27/2 ⁻	387.6 5	1724.3	35/2 ⁻	1336.7	31/2 ⁻
178 I	1336.7	31/2 ⁻	1158.4	29/2 ⁻	404.5 5	2106.8	35/2 ⁺	1702.3	31/2 ⁺
179.3	502.3	15/2 ⁺	323.0	11/2 ⁺	407.8 5	1933.8	37/2 ⁻	1526.0	33/2 ⁻
185 I	322.1	17/2 ⁻	137.5	13/2 ⁻	420.9 5	2321.6	37/2 ⁺	1900.7	33/2 ⁺
189 I	1526.0	33/2 ⁻	1336.7	31/2 ⁻	426.5 5	2150.8	39/2 ⁻	1724.3	35/2 ⁻
194 I	194.0	7/2 ⁺	0	9/2 ⁻	435.8 5	2542.6	39/2 ⁺	2106.8	35/2 ⁺
205.9 5	610.9	17/2 ⁺	405.0	13/2 ⁺	443.9 5	2377.7	41/2 ⁻	1933.8	37/2 ⁻
208.8 5	431.8	19/2 ⁻	222.9	15/2 ⁻	447.7 5	2769.3	41/2 ⁺	2321.6	37/2 ⁺
230 I	732.3	19/2 ⁺	502.3	15/2 ⁺	455 I	3768.4	53/2 ⁻	3313.4	49/2 ⁻
232.7 5	554.7	21/2 ⁻	322.1	17/2 ⁻	456.7 5	2999.3	43/2 ⁺	2542.6	39/2 ⁺
254.8 5	865.7	21/2 ⁺	610.9	17/2 ⁺	457 I	3686.4	49/2 ⁺	3229.4	45/2 ⁺
256 I	688.3	23/2 ⁻	431.8	19/2 ⁻	457.5 5	2608.3	43/2 ⁻	2150.8	39/2 ⁻
278.6 5	1010.9	23/2 ⁺	732.3	19/2 ⁺	460.1 5	3229.4	45/2 ⁺	2769.3	41/2 ⁺
279.1 5	833.6	25/2 ⁻	554.7	21/2 ⁻	462 I	3461	47/2 ⁺	2999.3	43/2 ⁺
301.9 5	1167.6	25/2 ⁺	865.7	21/2 ⁺	464 I	3313.4	49/2 ⁻	2849.4	45/2 ⁻
302 I	990.4	27/2 ⁻	688.3	23/2 ⁻	471.7 5	2849.4	45/2 ⁻	2377.7	41/2 ⁻

[†] From 2014Ho16. $\Delta E\gamma$ were not provided by the authors. The evaluator assumes 0.5 keV when E γ is stated to tenth of a keV and 1 keV otherwise.

$^{244}\text{Pu} (^{209}\text{Bi}, ^{208}\text{Bi} \gamma) \quad 2014\text{Ho16}$

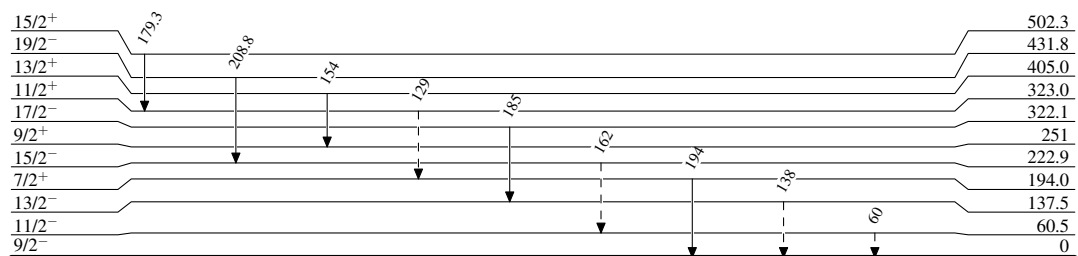
Level Scheme

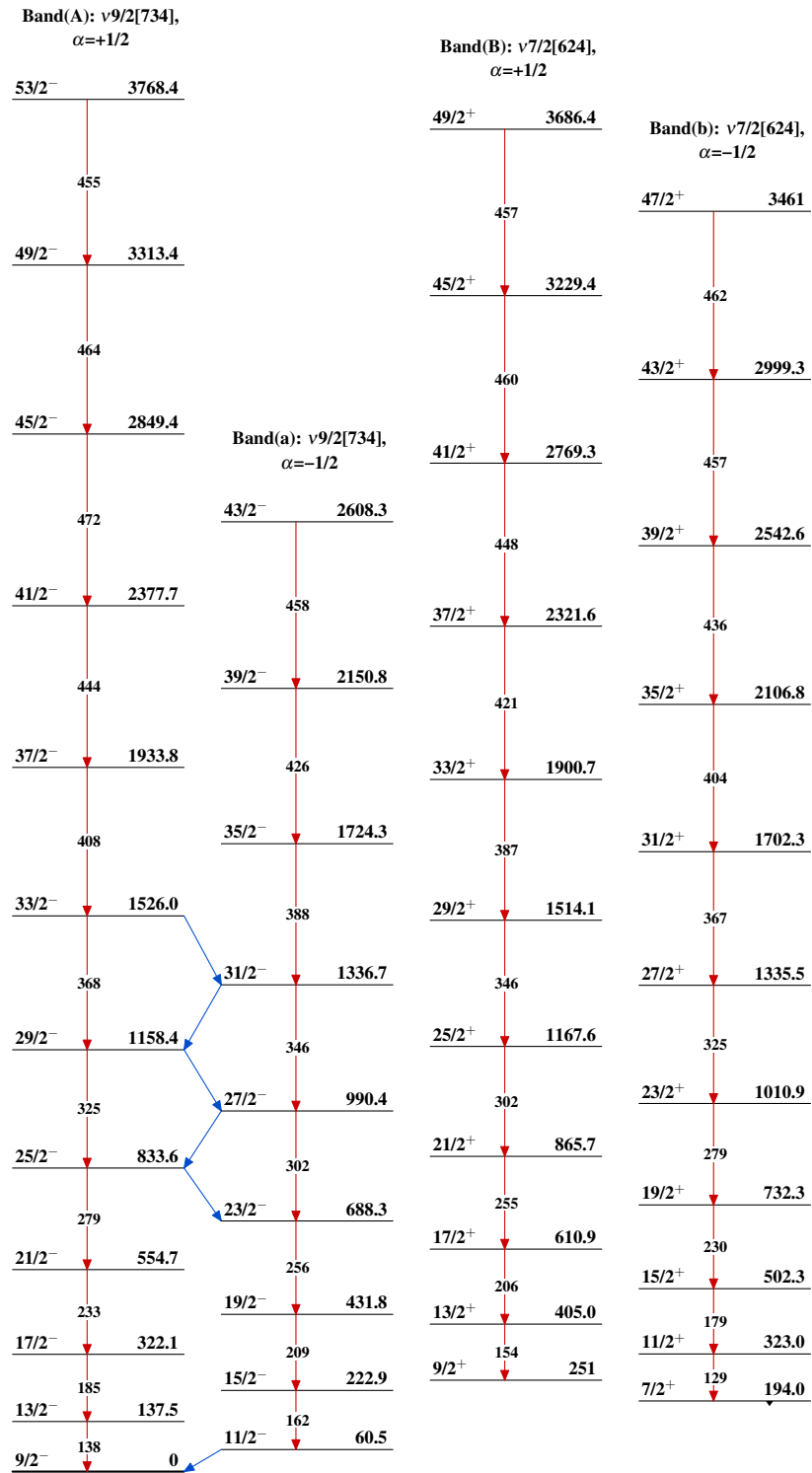


$^{244}\text{Pu}(\text{}^{209}\text{Bi}, \text{}^{208}\text{Bi}\gamma)$ 2014Ho16

Legend

Level Scheme (continued)

-----> γ Decay (Uncertain) $^{245}_{94}\text{Pu}_{151}$

$^{244}\text{Pu}(^{209}\text{Bi}, ^{208}\text{Bi}\gamma)$ 2014Ho16 $^{245}_{94}\text{Pu}_{151}$