

²⁴⁴Pu(¹⁸O,¹⁷Oγ) 2007Ma82

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

2007Ma82: ¹⁸O beam with E=162 MeV from JAEA-Tokai tandem accelerator bombarded an enriched ²⁴⁴Pu target. ¹⁷O particles detected with four SiΔE-E telescopes, and γ-rays were measured using six Ge detectors. Measured Eγ, Iγ, I(X ray).

²⁴⁵Pu Levels

E(level) [†]	J ^π	T _{1/2}	Comments
0 [#]	9/2 ⁻		
194.10 ^{&} 17	7/2 ⁺		
222 [#]	15/2 ⁻		
251 ^{&}	9/2 ⁺		
264.5 ^d 3	5/2 ⁺		
269.10 [@] 17	7/2 ⁺		
311.5 ^b 11	1/2 ⁺	0.33 μs 2	T _{1/2} : From γ(t) (2007Ma82).
331.2 [@] 3	9/2 ⁺		
360 ^{‡b}	5/2 ⁺		Additional information 1.
428 ^b	7/2 ⁺		
464 ^{‡b}	9/2 ⁺		Additional information 2.
579.8 ^a 4	3/2 ⁺		
619.2 ^a 4	5/2 ⁺		
642.9 ^c 3	3/2 ⁻		
665 ^a	7/2 ⁺		
681.15 ^c 15	7/2 ⁻		
728 ^a	9/2 ⁺		
765.50 ^c 20	11/2 ⁻		

[†] Deduced by the evaluator from least-squares fit to γ-ray energies, with E=360 keV and E=464 keV held fixed during least-squares fit.

[‡] No deexciting transitions have been provided. In an email reply of March 6, 2008 from the first author of 2007Ma82 to B.Singh, it was suggested that the outgoing γ transitions may be low energy and highly converted.

[#] Band(A): 9/2[734]. Band members between 9/2⁻ and 15/2⁻ have not been reported.

[@] Band(B): 7/2[613].

[&] Band(C): 7/2[624].

^a Band(D): 3/2[622].

^b Band(E): 1/2[620]. (3/2⁺) member has not been reported.

^c Band(F): 1/2[750].

^d Band(G): 5/2[622] Rotational Bandhead.

γ(²⁴⁵Pu)

R(asymmetry)=Iγ(in-plane)/Iγ(out-of-plane). Expected ratio is >1 for ΔJ=2, quadrupole and <1 for ΔJ=1, dipole. R(asymmetry) values have been provided by first author in 2007Ma82 to B. Singh in email reply on March 5, 2008.

²⁴⁴Pu(¹⁸O,¹⁷Oγ) **2007Ma82** (continued)

γ(²⁴⁵Pu) (continued)

<u>E_γ[‡]</u>	<u>I_γ[‡]</u>	<u>E_i(level)</u>	<u>J_i^π</u>	<u>E_f</u>	<u>J_f^π</u>	<u>Mult.[†]</u>	<u>α[#]</u>	<u>I_(γ+ce)[‡]</u>	<u>Comments</u>
(47)		311.5	1/2 ⁺	264.5	5/2 ⁺				E _γ : Unobserved due to large internal conversion coefficient (2007Ma82).
70.4 2	0.9 1	264.5	5/2 ⁺	194.10	7/2 ⁺	M1	15.67 26	15 2	α(exp)=19 2 (2007Ma82) ce(L)/(γ+ce)=0.707 8; ce(M)/(γ+ce)=0.1721 35 ce(N)/(γ+ce)=0.0469 10; ce(O)/(γ+ce)=0.01167 26; ce(P)/(γ+ce)=0.00222 5; ce(Q)/(γ+ce)=0.0001458 33 α(L)=11.79 19; α(M)=2.87 5 α(N)=0.781 13; α(O)=0.1945 32; α(P)=0.0370 6; α(Q)=0.00243 4 R(asymmetry)=0.52 12. Mult.: From α(exp) and R(asymmetry) value (2007Ma82).
75.0 2	2.7 2	269.10	7/2 ⁺	194.10	7/2 ⁺	D			R(asymmetry)=0.70 6.
194.1 2	90 5	194.10	7/2 ⁺	0	9/2 ⁻	E1	0.1100 16	100 5	α(K)exp=0.108 14 (2007Ma82) ce(K)/(γ+ce)=0.0771 10; ce(L)/(γ+ce)=0.01657 23; ce(M)/(γ+ce)=0.00404 6 ce(N)/(γ+ce)=0.001090 16; ce(O)/(γ+ce)=0.000264 4; ce(P)/(γ+ce)=4.65×10 ⁻⁵ 7; ce(Q)/(γ+ce)=2.188×10 ⁻⁶ 31 α(K)=0.0856 12; α(L)=0.01840 26; α(M)=0.00449 6 α(N)=0.001210 17; α(O)=0.000293 4; α(P)=5.16×10 ⁻⁵ 7; α(Q)=2.429×10 ⁻⁶ 34 R(asymmetry)=0.98 1. Mult.: From α(exp) and R(asymmetry) value (2007Ma82).
217.5 2	2.8 2	681.15	7/2 ⁻	464	9/2 ⁺	(D)			R(asymmetry)=0.93 7.
269.1 2	1.4 1	269.10	7/2 ⁺	0	9/2 ⁻	(D)			R(asymmetry)=0.98 17.
282.9 3	1.3 1	642.9	3/2 ⁻	360	5/2 ⁺	(D)			R(asymmetry)=1.07 16.
301.5 2	4.3 2	765.50	11/2 ⁻	464	9/2 ⁺	D			R(asymmetry)=0.67 4.
315.3 3	1.0 1	579.8	3/2 ⁺	264.5	5/2 ⁺	(D)			R(asymmetry)=0.88 19.
320.8 2	4.9 3	681.15	7/2 ⁻	360	5/2 ⁺	D			R(asymmetry)=0.64 4.
331.2 3	1.0 1	331.2	9/2 ⁺	0	9/2 ⁻	(D)			R(asymmetry)=1.15 18.
354.7 3	1.6 1	619.2	5/2 ⁺	264.5	5/2 ⁺	Q			R(asymmetry)=2.5 7.

[†] Except as noted, provided by evaluator based on author's R(asymmetry) values. See general comment on R(asymmetry).

[‡] From e-mail reply of March 5, 2008 to B. Singh from the first author in 2007Ma82.

[#] Additional information 3.

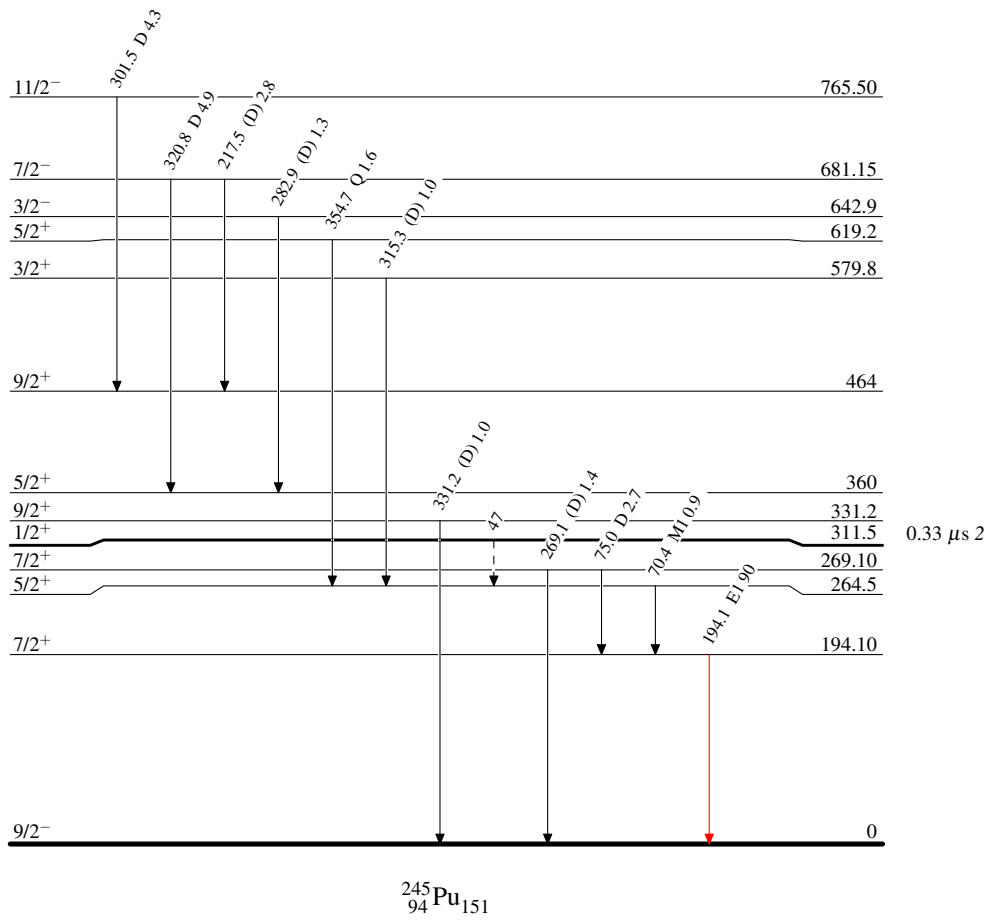
$^{244}\text{Pu}(^{18}\text{O}, ^{17}\text{O}\gamma)$ 2007Ma82

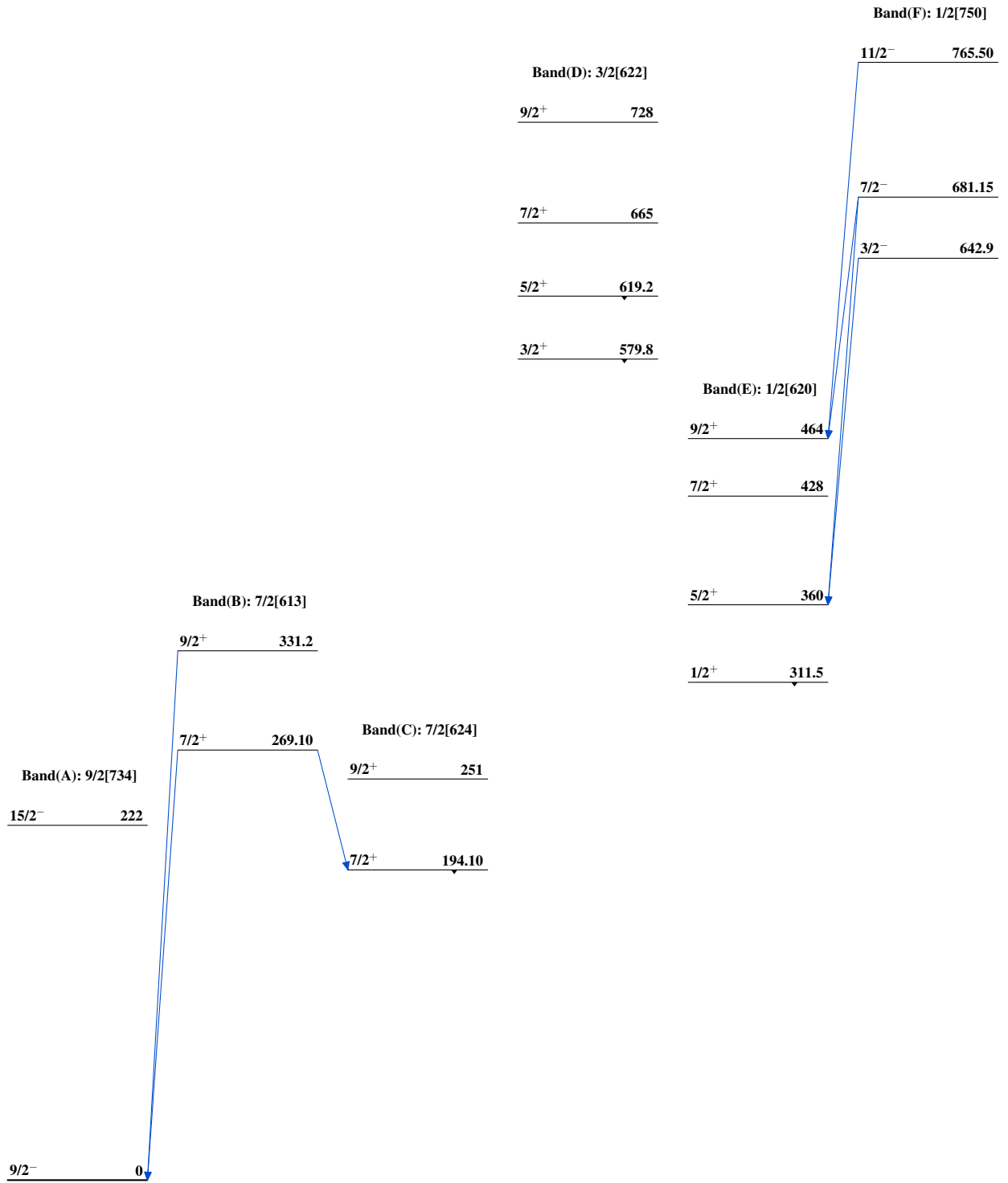
Legend

Level Scheme

Intensities: Relative I_γ

- $I_\gamma < 2\% \times I_\gamma^{\text{max}}$
- $I_\gamma < 10\% \times I_\gamma^{\text{max}}$
- $I_\gamma > 10\% \times I_\gamma^{\text{max}}$
- - - - - γ Decay (Uncertain)



$^{244}\text{Pu}(^{18}\text{O}, ^{17}\text{O}\gamma)$ 2007Ma82 $^{245}_{94}\text{Pu}_{151}$

 $^{244}\text{Pu}(^{18}\text{O}, ^{17}\text{O}\gamma)$ 2007Ma82 (continued)

Band(G): 5/2[622]
Rotational Bandhead

5/2⁺ 264.5

$^{245}_{94}\text{Pu}_{151}$