

$^{238}\text{U}(\alpha, \text{F}\gamma)$ 2007St19

Type	History		Literature Cutoff Date
	Author	Citation	
Full Evaluation	Balraj Singh	ENSDF	14-Jan-2022

2007St19 (also 2006StZW, 2003WuZZ): $E(\alpha)=30$ MeV. Measured prompt γ rays, E_γ , I_γ (fission fragments) γ -coin using Gammasphere array for γ radiation and highly-segmented 4π CHICO detector array for fission fragments. Note that all the references are conference papers.

 ^{118}Pd Levels

Following levels were given in 2003WuZZ only, not in the 2007St19 paper which likely supersedes 2003WuZZ, thus omitted in the dataset: 3471.3, 9^+ level decaying by a 848.9 γ ; and a 4800.7, 14^+ level (g.s. band member) decaying by a 657.3 γ .

E(level) [†]	J^π	Comments
0.0 [‡]	0^+	
378.5 [‡] 5	2^+	
812.6 [#] 5	2^+	
953.5 [‡] 6	4^+	
1182.6 [#] 5	3^+	
1461.6 [#] 6	4^+	
1671.9 [‡] 7	6^+	
1855.5 [#] 7	5^+	
1989.5 [@] 6	5^-	
2180.8 [#] 8	6^+	
2211.2 ^{&} 9		E(level): ordering of the 539.3 γ -411.2 γ cascade is not uniquely determined in 2007St19, but it is established in 2013Lu18 from observed higher (by 18%) intensity of the 539.3 γ as compared to that of the 411.2 γ , which is given here. Ordering was shown as reversed in 2007St19.
2480.3 [@] 7	7^-	
2492.9 [‡] 9	8^+	
2622.4 ^{&} 10		
2622.9 [#] 9	7^+	
3029.5 [@] 9	9^-	
3091.0 ^{&} 11		
3302.4 11		E(level): corresponds to 3775.3, level in the Adopted dataset, with the ordering of the γ cascade from ^{252}Cf SF decay (2013Lu18).
3348.4 [‡] 10	10^+	E(level): corresponds to 4143.1, (12^+) level in the Adopted dataset, with the ordering of the γ cascade from ^{252}Cf SF decay (2013Lu18).
3661.1 [@] 10	11^-	
3808.9 ^{&} 12		
4143.4 [‡] 11	12^+	E(level): corresponds to 3286.7, (10^+) level in the Adopted dataset, with the ordering of the γ cascade from ^{252}Cf SF decay (2013Lu18).
4386.9 [@] 7	13^-	Level given in 2003WuZZ, also in ^{252}Cf SF decay (2013Lu18).
4636.3 ^{&} 13		

[†] From E_γ data, assuming $\Delta(E_\gamma)=0.5$ keV for each E_γ value.

[‡] Band(A): g.s. Band.

[#] Band(B): Band based on 2^+ .

[@] Band(C): Band based on 5^- .

[&] Band(D): $\Delta J=2$ band.

$^{238}\text{U}(\alpha, \text{F}\gamma)$ **2007St19 (continued)** $\gamma(^{118}\text{Pd})$

Following γ transitions were given in [2003WuZZ](#) only, not in the [2007St19](#) paper which likely supersedes [2003WuZZ](#), thus omitted in the dataset: 536.6 γ from 3029.5 level; 848.9 γ from a 3471.3, 9⁺ level; and a 657.3 γ from a 4800.7, 14⁺ level as the g.s. band member.

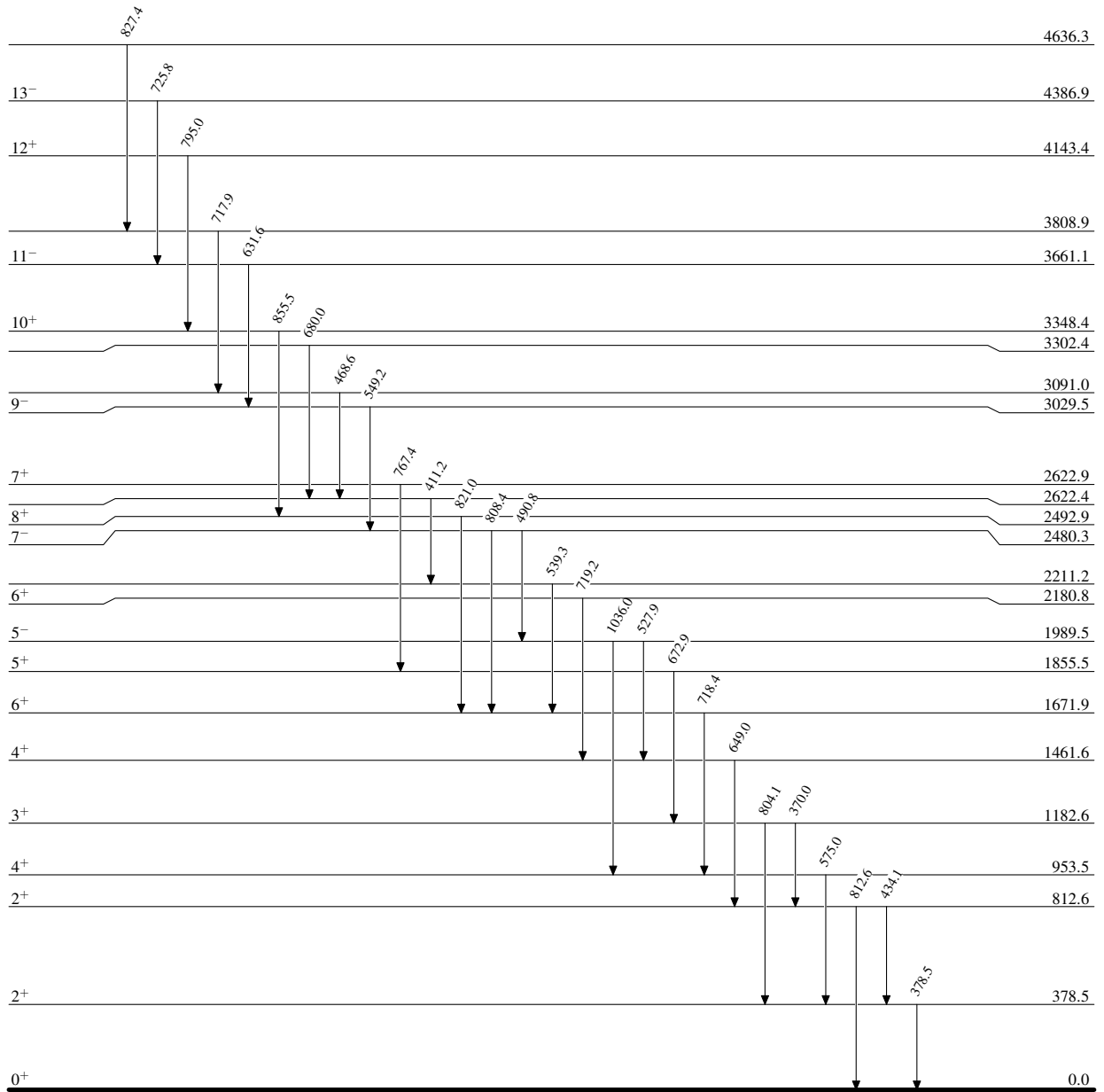
E_γ	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Comments
370.0	1182.6	3 ⁺	812.6	2 ⁺	
378.5	378.5	2 ⁺	0.0	0 ⁺	
411.2 [‡]	2622.4		2211.2		
434.1	812.6	2 ⁺	378.5	2 ⁺	
468.6 [‡]	3091.0		2622.4		
490.8	2480.3	7 ⁻	1989.5	5 ⁻	
527.9 [†]	1989.5	5 ⁻	1461.6	4 ⁺	γ seen in β^- decay.
539.3 [‡]	2211.2		1671.9	6 ⁺	
549.2	3029.5	9 ⁻	2480.3	7 ⁻	
575.0	953.5	4 ⁺	378.5	2 ⁺	
631.6	3661.1	11 ⁻	3029.5	9 ⁻	
649.0	1461.6	4 ⁺	812.6	2 ⁺	
672.9	1855.5	5 ⁺	1182.6	3 ⁺	
680.0 [‡]	3302.4		2622.4		
717.9 [‡]	3808.9		3091.0		E_γ : γ not confirmed in 2013Lu18 in ^{252}Cf SF decay.
718.4	1671.9	6 ⁺	953.5	4 ⁺	
719.2	2180.8	6 ⁺	1461.6	4 ⁺	
725.8 [†]	4386.9	13 ⁻	3661.1	11 ⁻	
767.4	2622.9	7 ⁺	1855.5	5 ⁺	
795.0	4143.4	12 ⁺	3348.4	10 ⁺	
804.1	1182.6	3 ⁺	378.5	2 ⁺	
808.4	2480.3	7 ⁻	1671.9	6 ⁺	
812.6	812.6	2 ⁺	0.0	0 ⁺	
821.0	2492.9	8 ⁺	1671.9	6 ⁺	
827.4 [‡]	4636.3		3808.9		E_γ : γ not confirmed in 2013Lu18 in ^{252}Cf SF decay.
855.5	3348.4	10 ⁺	2492.9	8 ⁺	
1036.0	1989.5	5 ⁻	953.5	4 ⁺	

[†] From [2003WuZZ](#) only, not given by [2007St19](#) or [2006StZW](#), but γ present in ^{252}Cf SF decay, thus given in the Adopted dataset.

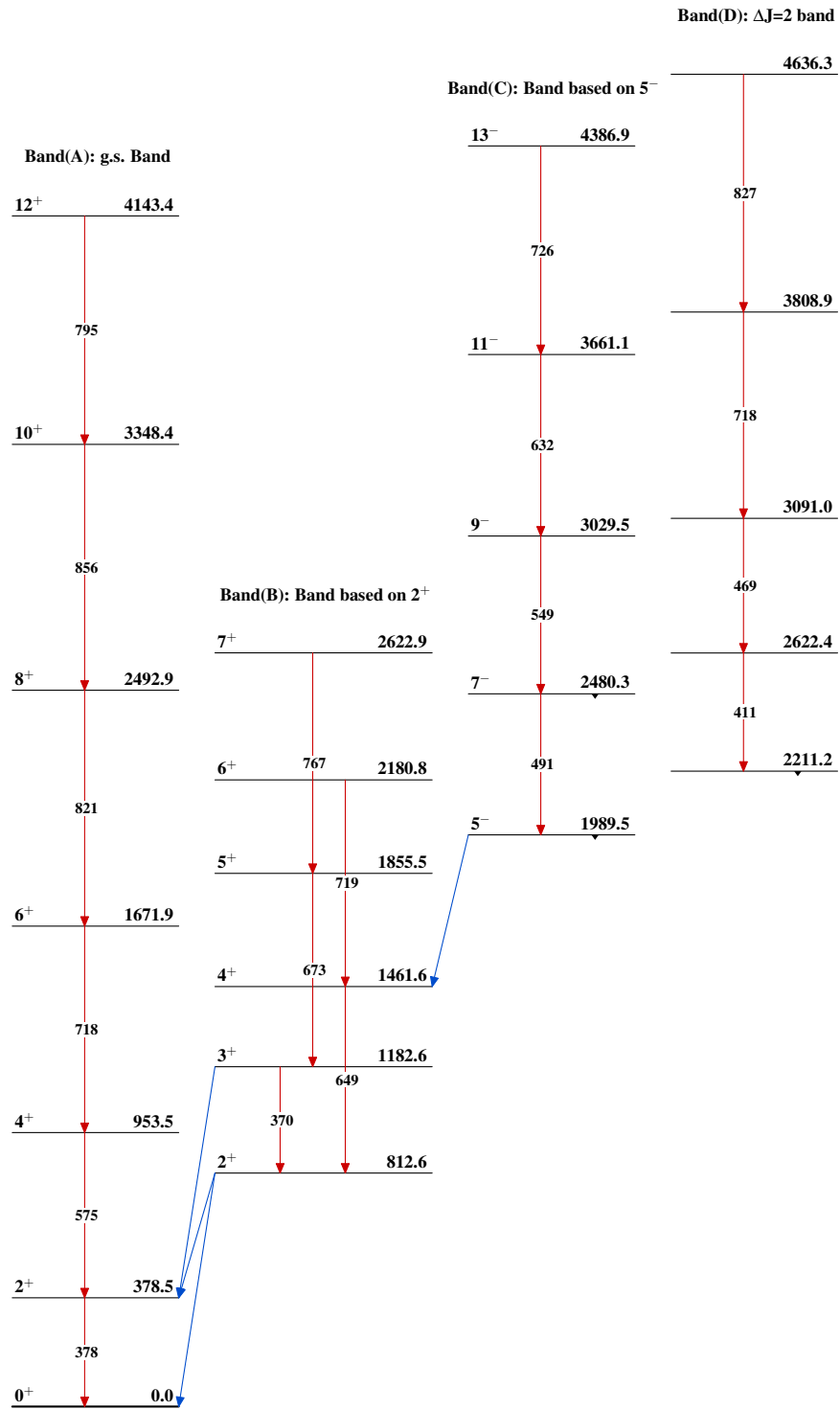
[‡] 539.3 γ \rightarrow 411.2 γ cascade with 827.4 γ \rightarrow 717.9 γ \rightarrow 468.6 γ cascade and 680.0 γ feeding this cascade in [2007St19](#) is given as 681.7 γ \rightarrow 470.4 γ \rightarrow 412.5 γ \rightarrow 539.3 γ cascade in [2013Lu18](#) in ^{252}Cf SF decay. The 717.9 γ and 827.4 γ were not confirmed by [2013Lu18](#). However the ordering of the 539.3-412.5 cascade is not uniquely determined [2007St19](#), but it is established in ^{252}Cf SF decay ([2013Lu18](#)) from observed higher (by 18%) intensity of the 539.3 γ as compared to that of the 412.5 γ . Here the ordering of this cascade is from the Adopted dataset.

$^{238}\text{U}(\alpha, \text{F}\gamma)$ 2007St19

Level Scheme



$^{118}_{46}\text{Pd}_{72}$

$^{238}\text{U}(\alpha, F\gamma)$ 2007St19 $^{118}_{46}\text{Pd}_{72}$