

$^{232}\text{Th}(\alpha,6n\gamma)$ **2010Nt01**

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	C. Morse	NDS 197,259 (2024).	26-Sep-2023

2010Nt01: E=61 MeV beam from cyclotron at iThemba Labs facility. Target=120 $\mu\text{g}/\text{cm}^2$ supported by a 20 $\mu\text{g}/\text{cm}^2$ carbon foil.

Measured E_γ , I_γ , $\gamma\gamma$ and (recoil) γ coin using AFRODITE array of up to nine Clover Ge detectors, eight segmented LEPS HPGe detectors, and a particle detector for evaporation residues. Other: **2011NtZZ**.

Electric dipole moments (D_0) deduced in this study are inconsistent with a tetrahedral shape for the negative-parity band.

 ^{230}U Levels

E(level) [†]	J^π	Comments
0.0 [‡]	0 ⁺	
51.72 [‡] 4	2 ⁺	
168.7 [‡] 10	4 ⁺	
345.7 [‡] 14	6 ⁺	
576.7 [‡] 17	8 ⁺	
732.7 [#] 17	7 ⁻	
854.7 [‡] 20	10 ⁺	
956.7 [#] 20	9 ⁻	
1174.7 [‡] 22	12 ⁺	
1226.7 [#] 22	11 ⁻	
1530.5 [‡] 24	14 ⁺	
1538.0 [#] 24	13 ⁻	
1884.3 [#] 24	15 ⁻	B(E1)/B(E2)>9×10 ⁻⁶ , Dipole moment (D_0)>0.15 efm.
1919 [‡] 3	16 ⁺	
2264 [#] 3	17 ⁻	B(E1)/B(E2)=1.0×10 ⁻⁵ 8, Dipole moment (D_0)=0.16 efm 6.
2336 [‡] 3	18 ⁺	
2778 [‡] 3	20 ⁺	
3242 [‡] 3	22 ⁺	

[†] Deduced from a least squares fit to γ -ray energies.

[‡] Band(A): $K^\pi=0^+$ g.s. band.

[#] Band(B): $K^\pi=0^-$ octupole band.

 $\gamma(^{230}\text{U})$

E_γ [†]	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Comments
51.72 4	51.72	2 ⁺	0.0	0 ⁺	E_γ : from Adopted Gammas.
117 1	168.7	4 ⁺	51.72	2 ⁺	
177 1	345.7	6 ⁺	168.7	4 ⁺	
231 1	576.7	8 ⁺	345.7	6 ⁺	
278 1	854.7	10 ⁺	576.7	8 ⁺	
320 1	1174.7	12 ⁺	854.7	10 ⁺	
345 1	2264	17 ⁻	1919	16 ⁺	
346 [‡] 1	1884.3	15 ⁻	1538.0	13 ⁻	
354 1	1884.3	15 ⁻	1530.5	14 ⁺	
356 1	1530.5	14 ⁺	1174.7	12 ⁺	
363 1	1538.0	13 ⁻	1174.7	12 ⁺	
372 1	1226.7	11 ⁻	854.7	10 ⁺	

Continued on next page (footnotes at end of table)

²³²Th(α ,6n γ) **2010Nt01 (continued)**

$\gamma(^{230}\text{U})$ (continued)

E_γ [†]	$E_i(\text{level})$	J_i^π	E_f	J_f^π	E_γ [†]	$E_i(\text{level})$	J_i^π	E_f	J_f^π
380 <i>I</i>	956.7	9 ⁻	576.7	8 ⁺	417 [‡] <i>I</i>	2336	18 ⁺	1919	16 ⁺
380 <i>I</i>	2264	17 ⁻	1884.3	15 ⁻	442 <i>I</i>	2778	20 ⁺	2336	18 ⁺
387 <i>I</i>	732.7	7 ⁻	345.7	6 ⁺	464 [‡] <i>I</i>	3242?	22 ⁺	2778	20 ⁺
389 <i>I</i>	1919	16 ⁺	1530.5	14 ⁺					

[†] Except where noted, evaluator has assumed $\Delta E_\gamma=1$ keV.

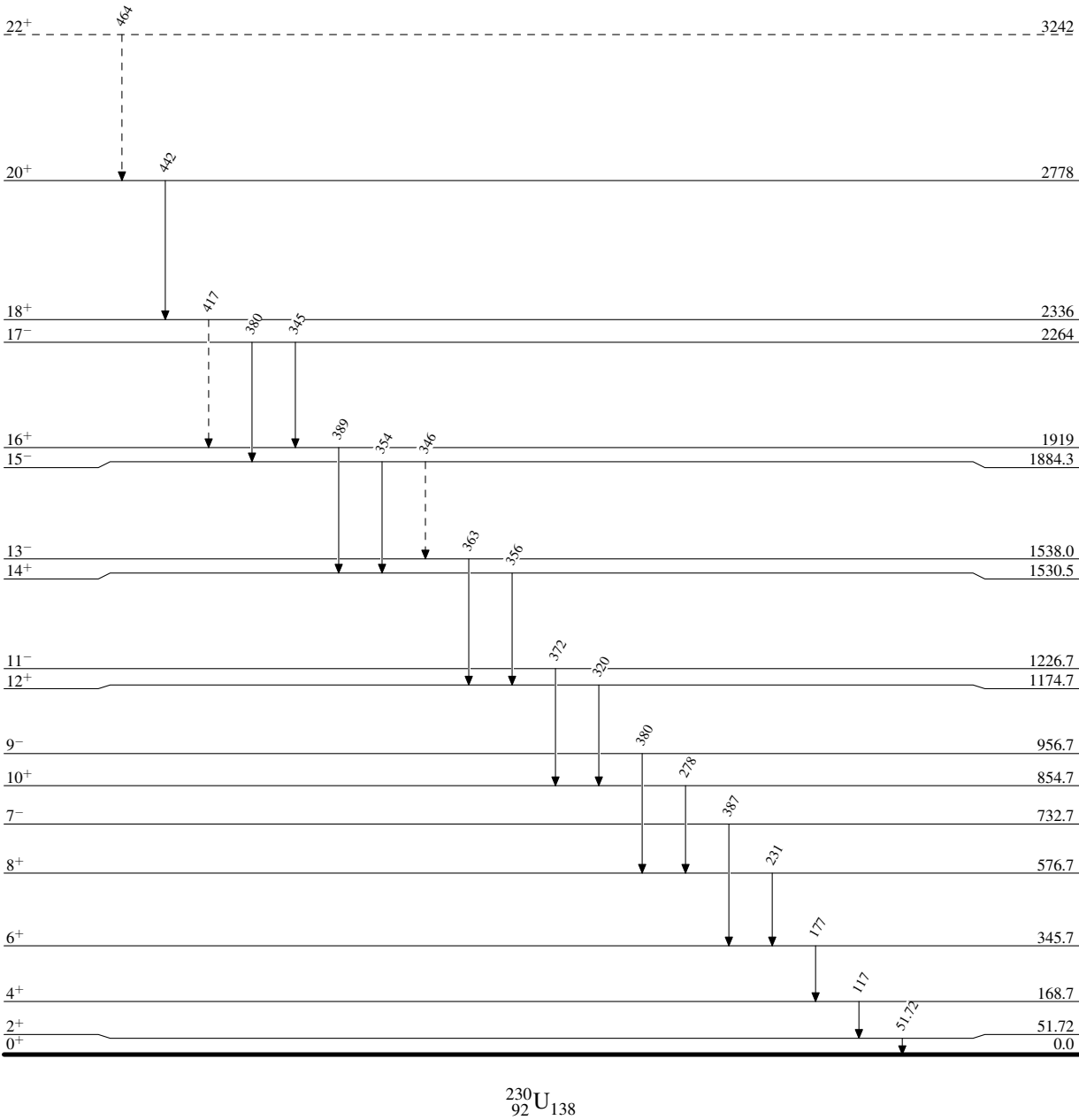
[‡] Placement of transition in the level scheme is uncertain.

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Legend

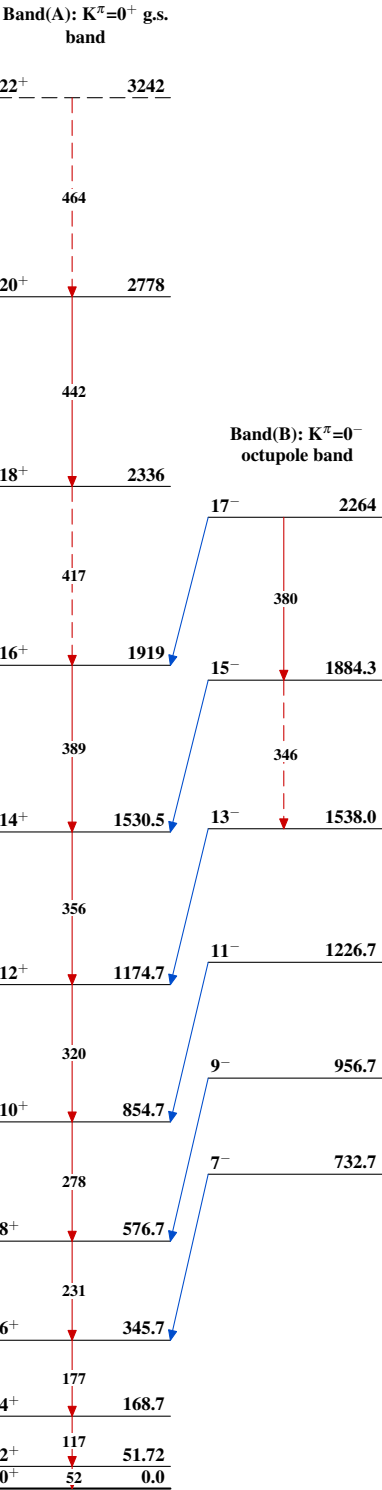
Level Scheme

-----► γ Decay (Uncertain)



$^{230}_{92}\text{U}_{138}$

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$^{230}_{92}\text{U}_{138}$