

$^{170}\text{Er}(^{238}\text{U},\text{X}\gamma)$ **2004Wu05**

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	Coral M. Baglin, E. A. Mccutchan		NDS 151, 334 (2018)	30-Jun-2018

E=1358 MeV. Measured $E\gamma$, $\gamma\gamma$ coin, (charged particle)- γ coin with the Gammasphere array of 100 Compton-suppressed Ge detectors and the highly segmented parallel-plate avalanche counter array, CHICO, which was used to measure scattering angles for both recoiling reaction products and their time-of-flight difference. No heavy shield was used for the BGO component of Gammasphere.

^{171}Er Levels

E(level) [†]	J ^π [‡]	E(level) [†]	J ^π [‡]	E(level) [†]	J ^π [‡]	E(level) [†]	J ^π [‡]
0.0 [#]	5/2 ⁻	671.4 ^a	11/2 ⁻	1940 ^a	23/2 ⁻	3722.3 [#]	37/2 ⁻
79.1 [@]	7/2 ⁻	722.7 ^{&}	13/2 ⁻	2036.6 [@]	27/2 ⁻	3901 ^a	35/2 ⁻
180.6 [#]	9/2 ⁻	803.2 [#]	17/2 ⁻	2045.6 ^{&}	25/2 ⁻	4017.6 ^{&}	37/2 ⁻
198.6 ^{&}	1/2 ⁻	1010.9 [@]	19/2 ⁻	2339.5 [#]	29/2 ⁻	4111.9 [@]	39/2 ⁻
256.9 ^a	3/2 ⁻	1013.0 ^a	15/2 ⁻	2522 ^a	27/2 ⁻	4507.8 [#]	41/2 ⁻
278.9 ^{&}	5/2 ⁻	1081.5 ^{&}	17/2 ⁻	2638.9 ^{&}	29/2 ⁻	4789.6 ^{&}	41/2 ⁻
303.6 [@]	11/2 ⁻	1238.5 [#]	21/2 ⁻	2659.7 [@]	31/2 ⁻	4936.0 [@]	43/2 ⁻
417.8 ^a	7/2 ⁻	1437 ^a	19/2 ⁻	2997.7 [#]	33/2 ⁻	5606.5 ^{&}	45/2 ⁻
449.2 [#]	13/2 ⁻	1485.3 [@]	23/2 ⁻	3176 ^a	31/2 ⁻		
453.9 ^{&}	9/2 ⁻	1525.2 ^{&}	21/2 ⁻	3298.5 ^{&}	33/2 ⁻		
615.3 [@]	15/2 ⁻	1752.0 [#]	25/2 ⁻	3352.3 [@]	35/2 ⁻		

[†] As quoted by 2004Wu05 in figure 5. Note, however, that with 1 keV uncertainty assigned to $E\gamma$, E(level) values based on a least-squares fit to $E\gamma$ would have large uncertainties, reaching 4 keV for the highest-energy levels.

[‡] Recommended by 2004Wu05; based on observed band structure assuming $J^\pi=5/2^-$, $1/2^-$ and $3/2^-$, respectively, for g.s., 199 and 257 levels.

[#] Band(A): $\nu 5/2[512]$, $\alpha=+1/2$ band.

[@] Band(a): $\nu 5/2[512]$, $\alpha=-1/2$ band.

[&] Band(B): $\nu 1/2[521]$, $\alpha=+1/2$ band.

^a Band(b): $\nu 1/2[521]$, $\alpha=-1/2$ band.

$\gamma(^{171}\text{Er})$

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
79.1 [‡]	79.1	7/2 ⁻	0.0	5/2 ⁻	224	303.6	11/2 ⁻	79.1	7/2 ⁻
101.5 [‡]	180.6	9/2 ⁻	79.1	7/2 ⁻	227.6 [‡]	1238.5	21/2 ⁻	1010.9	19/2 ⁻
123.0 [‡]	303.6	11/2 ⁻	180.6	9/2 ⁻	254	671.4	11/2 ⁻	417.8	7/2 ⁻
145.6 [‡]	449.2	13/2 ⁻	303.6	11/2 ⁻	269	449.2	13/2 ⁻	180.6	9/2 ⁻
161	417.8	7/2 ⁻	256.9	3/2 ⁻	269	722.7	13/2 ⁻	453.9	9/2 ⁻
166.1 [‡]	615.3	15/2 ⁻	449.2	13/2 ⁻	279.1 [†]	278.9	5/2 ⁻	0.0	5/2 ⁻
175	453.9	9/2 ⁻	278.9	5/2 ⁻	312	615.3	15/2 ⁻	303.6	11/2 ⁻
177.8 [†]	256.9	3/2 ⁻	79.1	7/2 ⁻	342	1013.0	15/2 ⁻	671.4	11/2 ⁻
180.6 [‡]	180.6	9/2 ⁻	0.0	5/2 ⁻	354	803.2	17/2 ⁻	449.2	13/2 ⁻
187.9 [‡]	803.2	17/2 ⁻	615.3	15/2 ⁻	359	1081.5	17/2 ⁻	722.7	13/2 ⁻
198.6 [†]	198.6	1/2 ⁻	0.0	5/2 ⁻	396	1010.9	19/2 ⁻	615.3	15/2 ⁻
207.7 [‡]	1010.9	19/2 ⁻	803.2	17/2 ⁻	424	1437	19/2 ⁻	1013.0	15/2 ⁻

Continued on next page (footnotes at end of table)

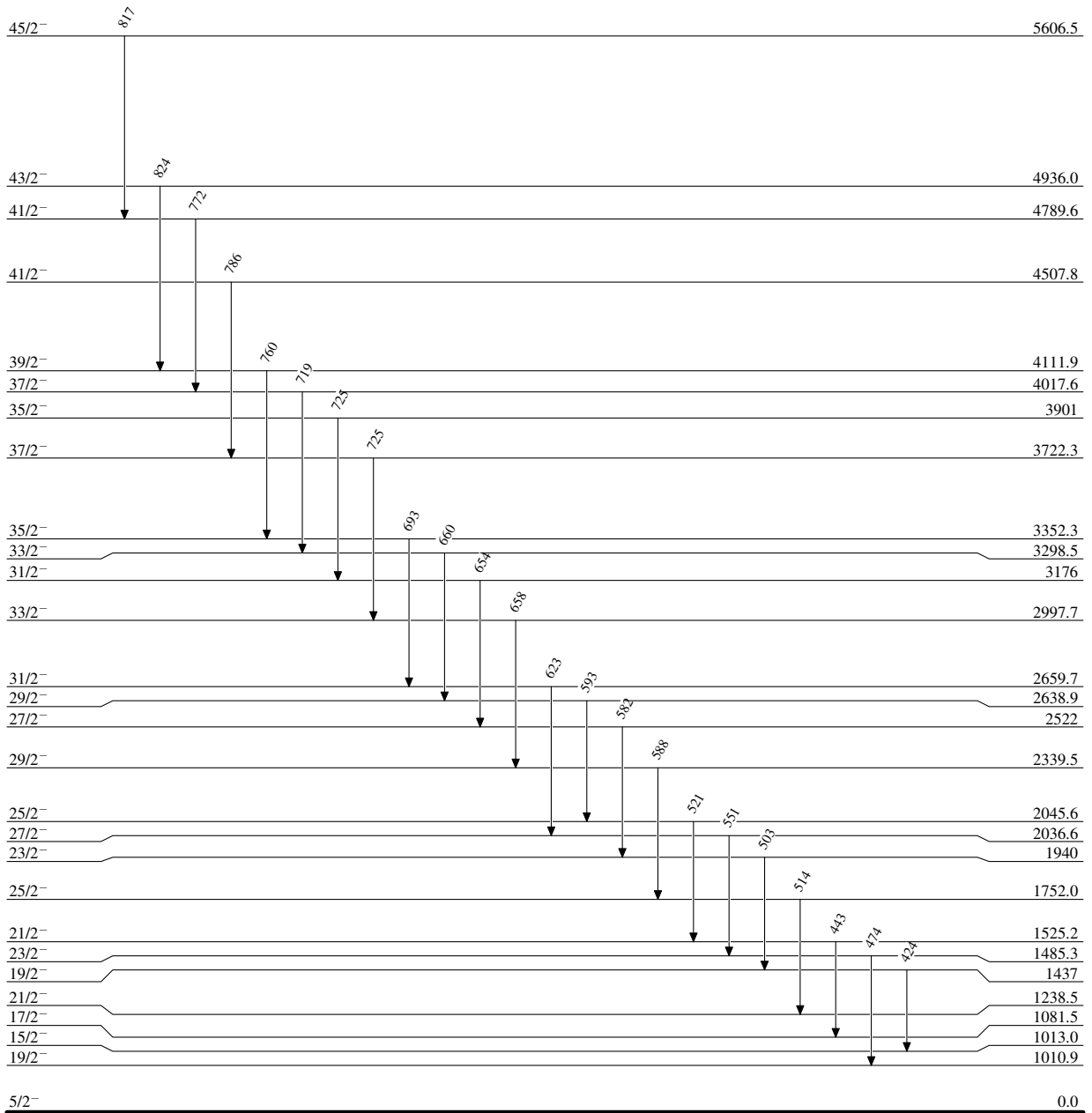
$^{170}\text{Er}(^{238}\text{U},\text{X}\gamma)$ **2004Wu05 (continued)** $\gamma(^{171}\text{Er})$ (continued)

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
435	1238.5	21/2 ⁻	803.2	17/2 ⁻	658	2997.7	33/2 ⁻	2339.5	29/2 ⁻
443	1525.2	21/2 ⁻	1081.5	17/2 ⁻	660	3298.5	33/2 ⁻	2638.9	29/2 ⁻
474	1485.3	23/2 ⁻	1010.9	19/2 ⁻	693	3352.3	35/2 ⁻	2659.7	31/2 ⁻
503	1940	23/2 ⁻	1437	19/2 ⁻	719	4017.6	37/2 ⁻	3298.5	33/2 ⁻
514	1752.0	25/2 ⁻	1238.5	21/2 ⁻	725	3722.3	37/2 ⁻	2997.7	33/2 ⁻
521	2045.6	25/2 ⁻	1525.2	21/2 ⁻	725	3901	35/2 ⁻	3176	31/2 ⁻
551	2036.6	27/2 ⁻	1485.3	23/2 ⁻	760	4111.9	39/2 ⁻	3352.3	35/2 ⁻
582	2522	27/2 ⁻	1940	23/2 ⁻	772	4789.6	41/2 ⁻	4017.6	37/2 ⁻
588	2339.5	29/2 ⁻	1752.0	25/2 ⁻	786	4507.8	41/2 ⁻	3722.3	37/2 ⁻
593	2638.9	29/2 ⁻	2045.6	25/2 ⁻	817	5606.5	45/2 ⁻	4789.6	41/2 ⁻
623	2659.7	31/2 ⁻	2036.6	27/2 ⁻	824	4936.0	43/2 ⁻	4111.9	39/2 ⁻
654	3176	31/2 ⁻	2522	27/2 ⁻					

† From Adopted Levels.

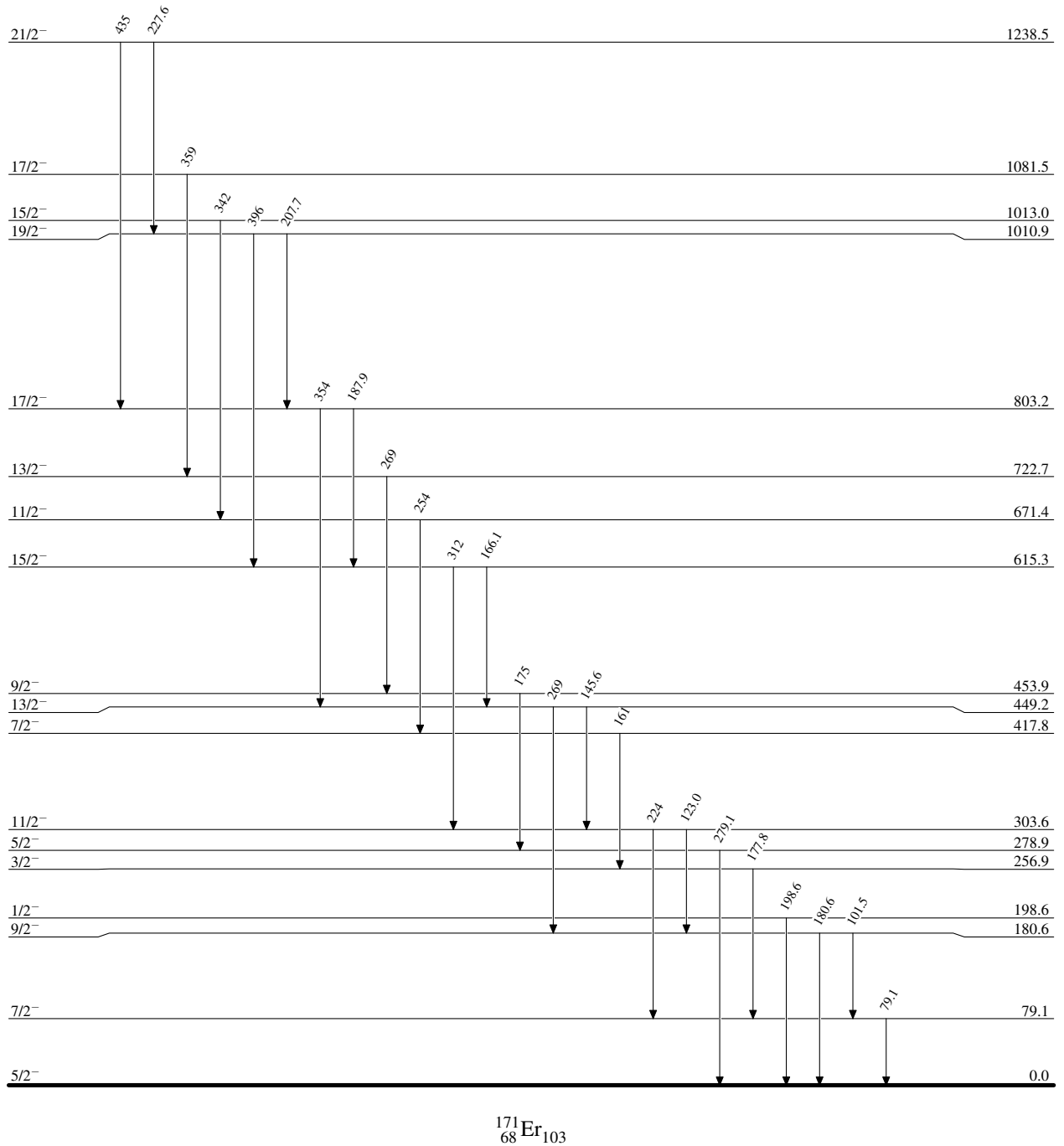
‡ From level-energy difference; energy not stated in 2004Wu05 but transition shown in fig. 5 of 2004Wu05.

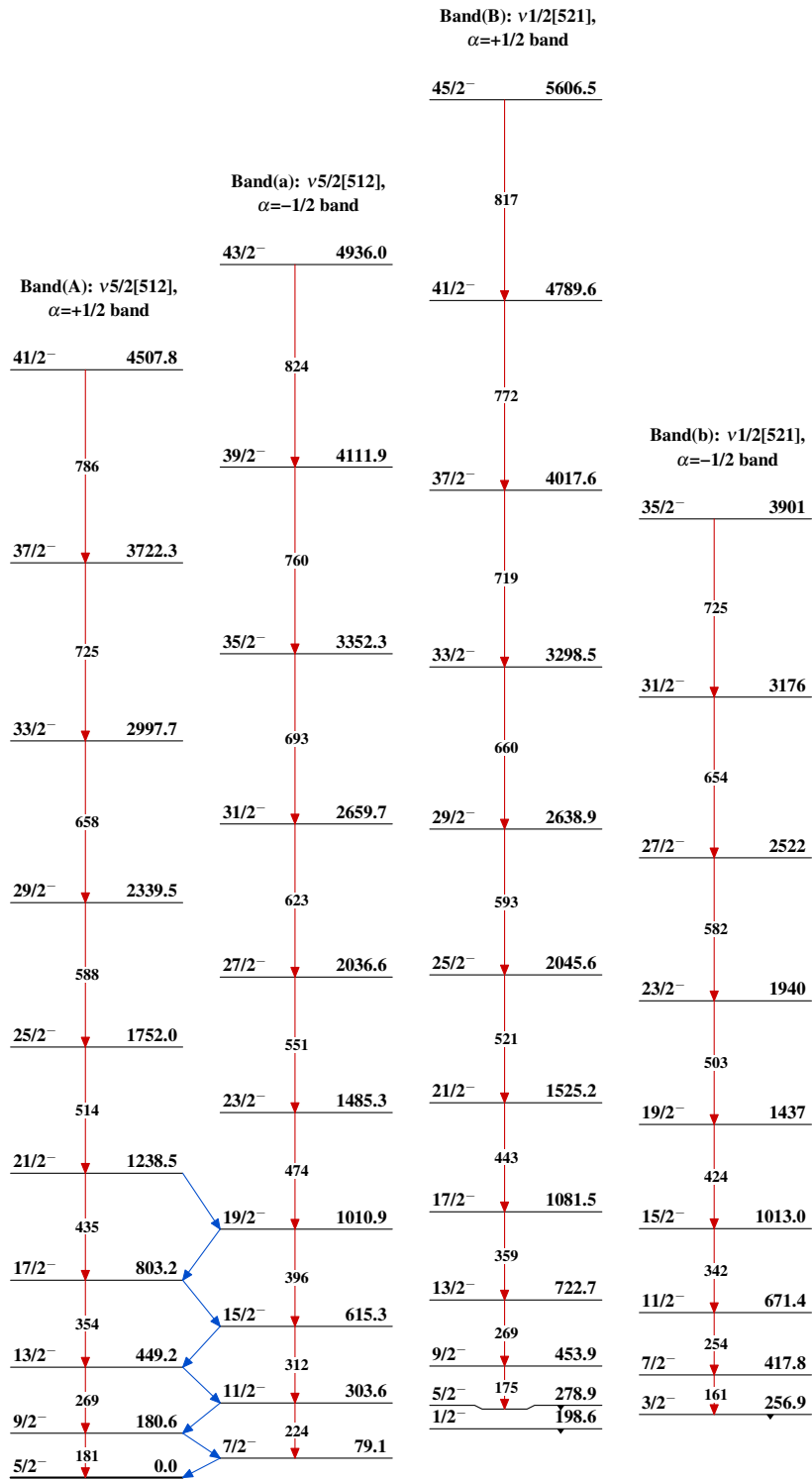
From 2004Wu05, except where noted. 2004Wu05 quote the uncertainty in E_γ to be ≈ 1 keV.

$^{170}\text{Er}(^{238}\text{U}, X\gamma)$ 2004Wu05Level Scheme $^{171}_{68}\text{Er}_{103}$

$^{170}\text{Er}(^{238}\text{U},\text{X}\gamma)$ 2004Wu05

Level Scheme (continued)

 $^{171}_{68}\text{Er}_{103}$

$^{170}\text{Er}(^{238}\text{U},\text{X}\gamma)$ 2004Wu05 $^{171}_{68}\text{Er}_{103}$