

²³⁸U(α,Fγ) **2006Wu01**

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Jean Blachot	NDS 110, 1239 (2009)	1-Feb-2008

E=30 MeV. Measured E_γ, I_γ, γγ, (fragment)γ coincidence by using Gammasphere array and highly segmented heavy-ion CHICO detector array.

¹¹¹Ru Levels

E(level) [†]	J ^π	E(level) [†]	J ^π	E(level) [†]	J ^π	E(level) [†]	J ^π
0.0 [#]	5/2 ⁺	1132.2 ^b 14	15/2 ⁻	2561.6 [@] 19	23/2 ⁺	4441.7 ^a 25	35/2 ⁻
150.2 [@] 2	7/2 ⁺	1140.6 [@] 13	15/2 ⁺	2655.2 ^{&} 18	25/2 ⁻	4635 [#] 3	33/2 ⁺
254.0 ^a 2	7/2 ⁻	1228.2 ^{&} 11	17/2 ⁻	2676.7 ^a 20	27/2 ⁻	5169.6 [@] 26	35/2 ⁺
316.81 ^{&} 20	9/2 ⁻	1264.7 ^a 14	19/2 ⁻	2918.9 [#] 21	25/2 ⁺	5379.2 ^{&} 25	37/2 ⁻
355.9 [#] 7	9/2 ⁺	1456.9 [#] 16	17/2 ⁺	3340.9 ^b 21	27/2 ⁻	5411.7 ^a 27	39/2 ⁻
393.5 ^a 9	11/2 ⁻	1755.9 ^b 15	19/2 ⁻	3380.6 ^{‡@} 22	27/2 ⁺	6415.7 ^a 29	43/2 ⁻
581.6 [@] 8	11/2 ⁺	1806.6 [@] 17	19/2 ⁺	3502.2 ^{&} 21	29/2 ⁻	6439.2 ^{&} 27	41/2 ⁻
695.9 ^{&} 9	13/2 ⁻	1889.2 ^{&} 15	21/2 ⁻	3524.7 ^a 23	31/2 ⁻	7499.7 ^a 31	47/2 ⁻
750.4 ^a 11	15/2 ⁻	1915.7 ^a 18	23/2 ⁻	3745.9 [#] 24	29/2 ⁺	7545.2 ^{&} 29	45/2 ⁻
851.9 [#] 12	13/2 ⁺	2151.9 [#] 19	21/2 ⁺	4247.6 [@] 24	31/2 ⁺		
856.5 ^b 13	13/2 ⁻	2502.9 ^b 18	23/2 ⁻	4411.2 ^{&} 23	33/2 ⁻		

[†] From least-squares fit to E_γ's.

[‡] 3397.7 quoted in figure 6 of 2006Wu01 is a misprint, it should be 3379.7.

[#] Band(A): K^π=5/2⁺ band, α=+1/2.

[@] Band(a): K^π=5/2⁺ band, α=-1/2.

[&] Band(B): K^π=5/2⁻ band, α=+1/2.

^a Band(b): K^π=5/2⁻ band, α=-1/2.

^b Band(C): Band based on 13/2⁻.

γ(¹¹¹Ru)

E _i (level)	J _i ^π	E _γ	I _γ [‡]	E _f	J _f ^π	E _i (level)	J _i ^π	E _γ	I _γ [‡]	E _f	J _f ^π
150.2	7/2 ⁺	150.2 [#] 2		0.0	5/2 ⁺	1132.2	15/2 ⁻	381.7 [†] 10		750.4	15/2 ⁻
254.0	7/2 ⁻	103.8 [#] 2		150.2	7/2 ⁺	1140.6	15/2 ⁺	559 1		581.6	11/2 ⁺
		254.0 [#] 2		0.0	5/2 ⁺	1228.2	17/2 ⁻	477.9 10	93 9	750.4	15/2 ⁻
316.81	9/2 ⁻	62.8 [#] 2		254.0	7/2 ⁻			532.2 10	100	695.9	13/2 ⁻
		166.6 [#] 2		150.2	7/2 ⁺	1264.7	19/2 ⁻	514 1		750.4	15/2 ⁻
355.9	9/2 ⁺	205.7 10	88 10	150.2	7/2 ⁺	1456.9	17/2 ⁺	605 1		851.9	13/2 ⁺
		355.9 10	100	0.0	5/2 ⁺	1755.9	19/2 ⁻	491.1 [†] 10		1264.7	19/2 ⁻
393.5	11/2 ⁻	139.5 [†] 10		254.0	7/2 ⁻			624 1		1132.2	15/2 ⁻
581.6	11/2 ⁺	225.7 10	29 4	355.9	9/2 ⁺	1806.6	19/2 ⁺	666 1		1140.6	15/2 ⁺
		431.4 10	100	150.2	7/2 ⁺	1889.2	21/2 ⁻	661 1		1228.2	17/2 ⁻
695.9	13/2 ⁻	302.7 10	73 7	393.5	11/2 ⁻	1915.7	23/2 ⁻	651 1		1264.7	19/2 ⁻
		378.6 10	100	316.81	9/2 ⁻	2151.9	21/2 ⁺	695 1		1456.9	17/2 ⁺
750.4	15/2 ⁻	357 1		393.5	11/2 ⁻	2502.9	23/2 ⁻	747 1		1755.9	19/2 ⁻
851.9	13/2 ⁺	496 1		355.9	9/2 ⁺	2561.6	23/2 ⁺	755 1		1806.6	19/2 ⁺
856.5	13/2 ⁻	462.6 [†] 10		393.5	11/2 ⁻	2655.2	25/2 ⁻	766 1		1889.2	21/2 ⁻
1132.2	15/2 ⁻	276 1		856.5	13/2 ⁻	2676.7	27/2 ⁻	761 1		1915.7	23/2 ⁻

Continued on next page (footnotes at end of table)

$^{238}\text{U}(\alpha, \text{F}\gamma)$ **2006Wu01 (continued)** $\gamma(^{111}\text{Ru})$ (continued)

$E_i(\text{level})$	J_i^π	E_γ	E_f	J_f^π	$E_i(\text{level})$	J_i^π	E_γ	E_f	J_f^π
2918.9	25/2 ⁺	767 <i>I</i>	2151.9	21/2 ⁺	4635	33/2 ⁺	889 <i>I</i>	3745.9	29/2 ⁺
3340.9	27/2 ⁻	838 <i>I</i>	2502.9	23/2 ⁻	5169.6	35/2 ⁺	922 <i>I</i>	4247.6	31/2 ⁺
3380.6	27/2 ⁺	819 <i>I</i>	2561.6	23/2 ⁺	5379.2	37/2 ⁻	968 <i>I</i>	4411.2	33/2 ⁻
3502.2	29/2 ⁻	847 <i>I</i>	2655.2	25/2 ⁻	5411.7	39/2 ⁻	970 <i>I</i>	4441.7	35/2 ⁻
3524.7	31/2 ⁻	848 <i>I</i>	2676.7	27/2 ⁻	6415.7	43/2 ⁻	1004 <i>I</i>	5411.7	39/2 ⁻
3745.9	29/2 ⁺	827 <i>I</i>	2918.9	25/2 ⁺	6439.2	41/2 ⁻	1060 <i>I</i>	5379.2	37/2 ⁻
4247.6	31/2 ⁺	867 <i>I</i>	3380.6	27/2 ⁺	7499.7	47/2 ⁻	1084 <i>I</i>	6415.7	43/2 ⁻
4411.2	33/2 ⁻	909 <i>I</i>	3502.2	29/2 ⁻	7545.2	45/2 ⁻	1106 <i>I</i>	6439.2	41/2 ⁻
4441.7	35/2 ⁻	917 <i>I</i>	3524.7	31/2 ⁻					

† Energy not given by **2006Wu01**, deduced by the evaluator from level-energy difference.

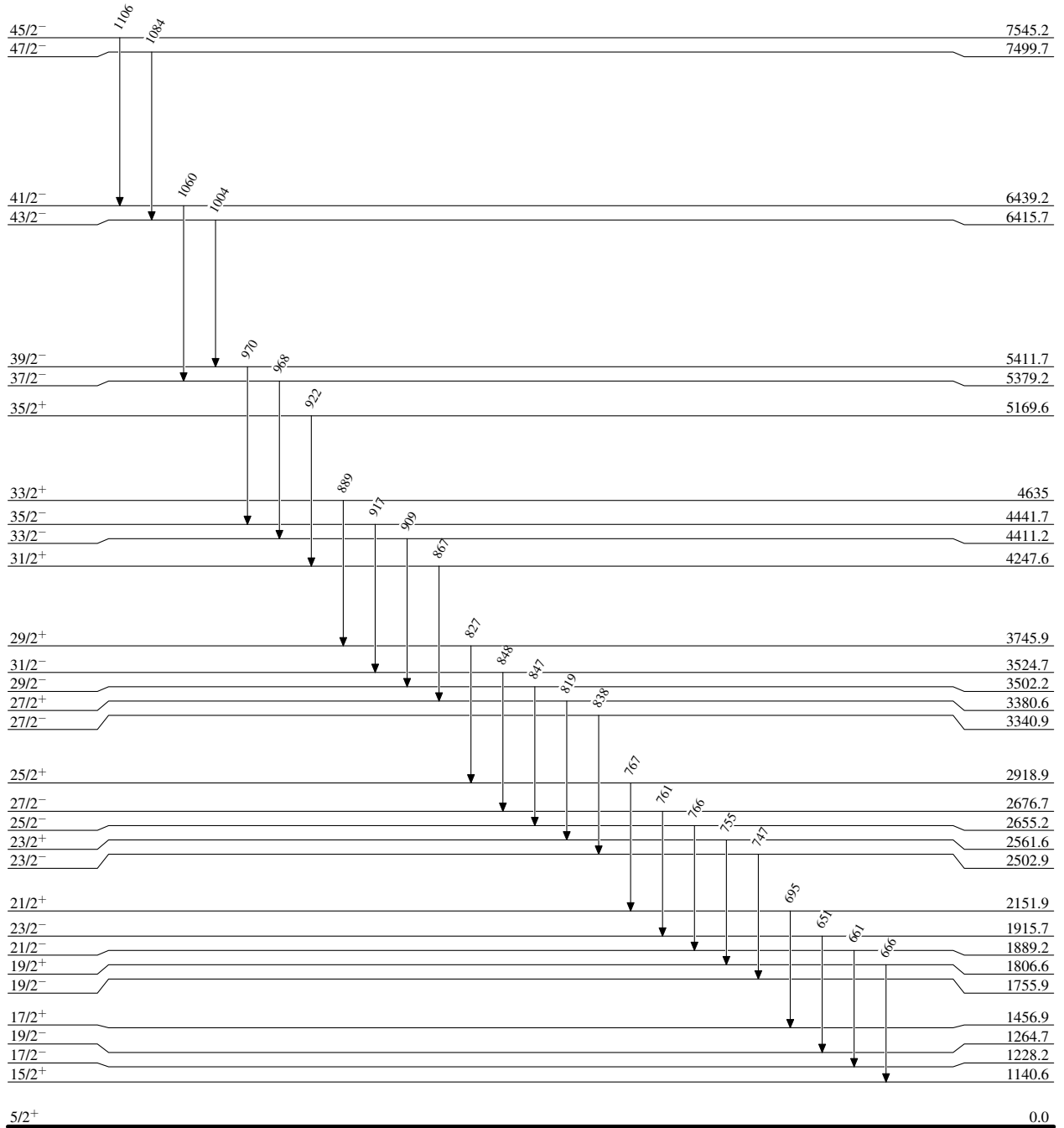
‡ The quoted uncertainty is statistical, the systematic uncertainty could be up to 30%.

From "Adopted Levels, gammas" for ^{111}Ru .

$^{238}\text{U}(\alpha, \text{F}\gamma)$ 2006Wu01

Level Scheme

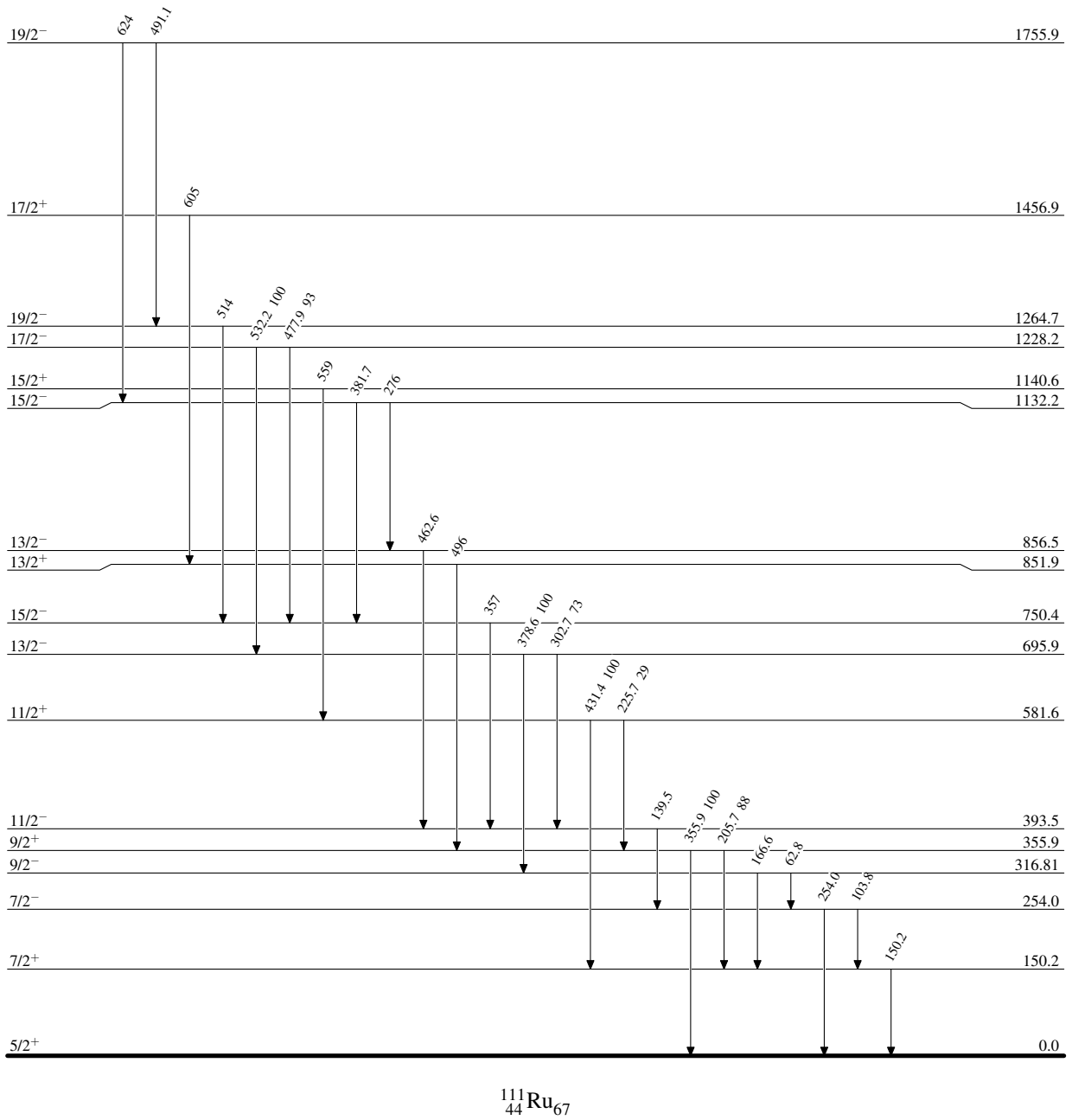
Intensities: Relative photon branching from each level

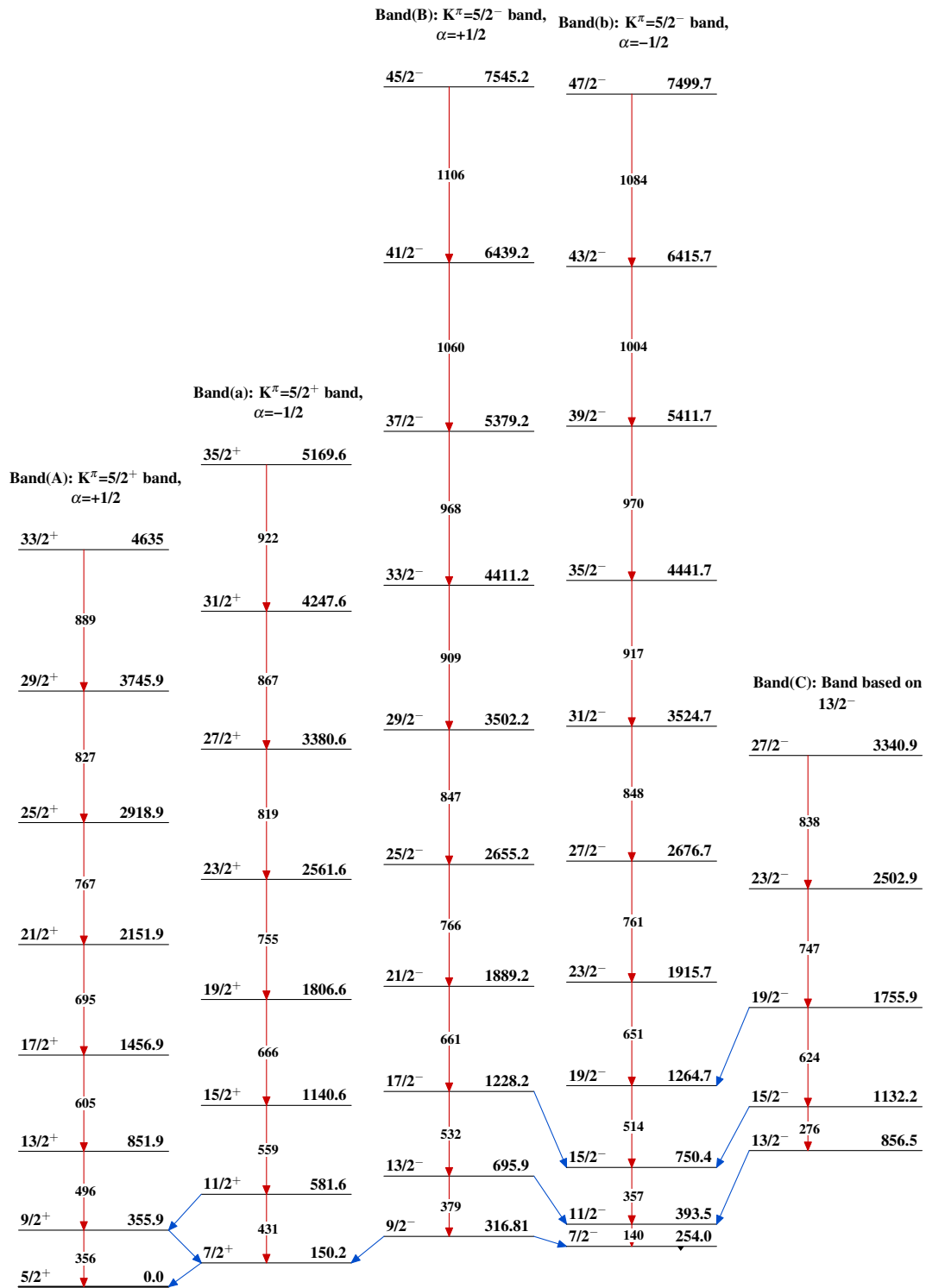


$^{238}\text{U}(\alpha, \text{F}\gamma)$ 2006Wu01

Level Scheme (continued)

Intensities: Relative photon branching from each level



$^{238}\text{U}(\alpha, \text{F}\gamma)$ 2006Wu01 $^{111}_{44}\text{Ru}_{67}$