^{160}Gd(^{14}N,4nγ) 1997Ka30

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	C. M. Baglin[1], E. A. Mccutchan[2], S. Basunia[1]	NDS 153, 1 (2018)	1-Oct-2018

E(^{14}N)=68 MeV; isotopically enriched target, detector array (9 Compton-suppressed HPGe detectors with 14-element BGO multiplicity filter), θ=45°, 99°, 153°; measured Eγ, Iγ, $\gamma\gamma$ coin, DCO ratios (θ=153°, 99°).

The band structure indicated here is that of 1997Ka30. It differs in several respects from that in Adopted Levels, Gammas, but is shown here for completeness. See comments on individual bands.

^{170}Lu Levels

E(level)†	Jπ‡	E(level)†	Jπ‡	E(level)†	Jπ‡	E(level)†	Jπ‡
0.0+x@	5−	633.2+y[a]	8−	1965.6+x#	16−	3967.8+y[b]	19−
0.0+y[a]	4−	753.2+x@	11−	2170.3+z&	17+	4018.6+x#	22−
0.0+z&	3+	823.5+z&	11+	2211.1+y[a]	14−	4033.3+z&	23+
79.8+x#	6−	846.9+y[b]	9−	2222.6+x@	17−	4353.1+y[a]	20−
91.1+z&	5+	967.3+x#	12−	2533.6+y[b]	15−	4403.8+x?@	23−
123.7+y[b]	5−	1082.2+y[a]	10−	2580.1+x#	18−	4737.8+y?[b]	21−
175.8+x@	7−	1161.4+x@	13−	2735.0+z&	19+	4769.0+z&	25+
259.5+z&	7+	1211.1+z&	13+	2873.7+x@	19−	4830.6+x?#	24−
270.9+y[a]	6−	1335.9+y[b]	11−	2876.2+y[a]	16−	5141.1+y?[a]	22−
295.5+x#	8−	1426.6+x#	14−	3226.3+y[b]	17−	5557.2+z&	27+
425.5+x@	9−	1611.0+y[a]	12−	3266.1+x#	20−	5992.1+y?[a]	24−
440.7+y[b]	7−	1651.1+x@	15−	3355.5+z&	21+	6404.0+z&	29+
504.6+z&	9+	1661.5+z&	15+	3596.7+y[a]	18−	7307.1+z&	31+
590.3+x#	10−	1900.4+y[b]	13−	3601.8+x@	21−	8242.1+z?&	33+

† From least-squares fit to Eγ, giving equal weight to all Eγ data. From Adopted Levels, z=114.9 keV.

‡ Authors′ values, based on measured DCO ratios (no data stated by authors), spin versus level energy systematics in neighboring odd-A and odd-odd Lu isotopes, cranked shell model arguments.

Band(A): (π $h_{9/2}$)⊗(ν $i_{13/2}$), α=0. Note that adopted J values are 1 unit higher than shown here.

@ Band(a): (π $h_{9/2}$)⊗(ν $i_{13/2}$), α=1. Note that adopted J values are 1 unit higher than shown here.

& Band(B): (π $h_{9/2}$)⊗(ν $p_{3/2}$), α=1. Note that Eγ for transitions connecting the highest members of this band differ from adopted values by as much as 6.6 keV.

[a] Band(C): (π $g_{7/2}$)⊗(ν $p_{3/2}$), α=0. Jπ assigned by 1997Ka30 based on available spin versus level energy systematics in neighboring odd-A and odd-odd Lu isotopes. However, adopted configuration is (π $g_{7/2}$)⊗(ν $i_{13/2}$), with Jπ=7+ bandhead (cf. Jπ=4− here). Also, the existence of the 788.0γ has not been confirmed in the subsequent (HI,xnγ) study by 1999Le45, so it is omitted from Adopted Gammas.

[b] Band(c): (π $g_{7/2}$)⊗(ν $p_{3/2}$), α=1. Jπ assigned by 1997Ka30 based on available spin versus level energy systematics in neighboring odd-A and odd-odd Lu isotopes. However, adopted configuration is (π $g_{7/2}$)⊗(ν $i_{13/2}$), with Jπ=7+ bandhead (cf. Jπ=4− here). Also, the placements of the 770.0γ and 851.0γ are not adopted since they differ in the subsequent (HI,xnγ) study by 1999Le45.

^{160}Gd(^{14}N,4nγ) 1997Ka30 (continued)

$\gamma(^{170}Lu)$

E_γ †	E_i(level)	J_i^π	E_f	J_f^π	E_γ †	E_i(level)	J_i^π	E_f	J_f^π
79.8	79.8+x	6^-	0.0+x	5^-	387.6	1211.1+z	13^+	823.5+z	11^+
91.1	91.1+z	5^+	0.0+z	3^+	393.4	3266.1+x	20^-	2873.7+x	19^-
95.8	175.8+x	7^-	79.8+x	6^-	406.3	846.9+y	9^-	440.7+y	7^-
119.5	295.5+x	8^-	175.8+x	7^-	407.9	1161.4+x	13^-	753.2+x	11^-
123.4	123.7+y	5^-	0.0+y	4^-	448.8	1082.2+y	10^-	633.2+y	8^-
130.0	425.5+x	9^-	295.5+x	8^-	450.4	1661.5+z	15^+	1211.1+z	13^+
146.9	270.9+y	6^-	123.7+y	5^-	459.6	1426.6+x	14^-	967.3+x	12^-
162.8	753.2+x	11^-	590.3+x	10^-	489.5	1335.9+y	11^-	846.9+y	9^-
164.5	590.3+x	10^-	425.5+x	9^-	489.7	1651.1+x	15^-	1161.4+x	13^-
168.4	259.5+z	7^+	91.1+z	5^+	508.8	2170.3+z	17^+	1661.5+z	15^+
169.6	440.7+y	7^-	270.9+y	6^-	528.1	1611.0+y	12^-	1082.2+y	10^-
175.8	175.8+x	7^-	0.0+x	5^-	539.6	1965.6+x	16^-	1426.6+x	14^-
192.1	633.2+y	8^-	440.7+y	7^-	564.5	1900.4+y	13^-	1335.9+y	11^-
194.0	1161.4+x	13^-	967.3+x	12^-	564.7	2735.0+z	19^+	2170.3+z	17^+
213.8	846.9+y	9^-	633.2+y	8^-	570.8	2222.6+x	17^-	1651.1+x	15^-
214.3	967.3+x	12^-	753.2+x	11^-	600.1	2211.1+y	14^-	1611.0+y	12^-
216.0	295.5+x	8^-	79.8+x	6^-	614.5	2580.1+x	18^-	1965.6+x	16^-
224.0	1651.1+x	15^-	1426.6+x	14^-	620.5	3355.5+z	21^+	2735.0+z	19^+
234.9	1082.2+y	10^-	846.9+y	9^-	633.2	2533.6+y	15^-	1900.4+y	13^-
245.1	504.6+z	9^+	259.5+z	7^+	651.1	2873.7+x	19^-	2222.6+x	17^-
249.5	425.5+x	9^-	175.8+x	7^-	665.1	2876.2+y	16^-	2211.1+y	14^-
253.9	1335.9+y	11^-	1082.2+y	10^-	677.8	4033.3+z	23^+	3355.5+z	21^+
257.5	2222.6+x	17^-	1965.6+x	16^-	685.2	3266.1+x	20^-	2580.1+x	18^-
265.0	1426.6+x	14^-	1161.4+x	13^-	692.7	3226.3+y	17^-	2533.6+y	15^-
271.2	270.9+y	6^-	0.0+y	4^-	720.5	3596.7+y	18^-	2876.2+y	16^-
275.9	1611.0+y	12^-	1335.9+y	11^-	727.8	3601.8+x	21^-	2873.7+x	19^-
290.0‡	1900.4+y	13^-	1611.0+y	12^-	735.7	4769.0+z	25^+	4033.3+z	23^+
294.6	2873.7+x	19^-	2580.1+x	18^-	741.5	3967.8+y	19^-	3226.3+y	17^-
295.0	590.3+x	10^-	295.5+x	8^-	752.5	4018.6+x	22^-	3266.1+x	20^-
310.0‡	2211.1+y	14^-	1900.4+y	13^-	756.4	4353.1+y	20^-	3596.7+y	18^-
314.5	1965.6+x	16^-	1651.1+x	15^-	770.0‡	4737.8+y?	21^-	3967.8+y	19^-
317.0	440.7+y	7^-	123.7+y	5^-	788.0‡	5141.1+y?	22^-	4353.1+y	20^-
318.9	823.5+z	11^+	504.6+z	9^+	788.2	5557.2+z	27^+	4769.0+z	25^+
323.0‡	2533.6+y	15^-	2211.1+y	14^-	802.0‡	4403.8+x?	23^-	3601.8+x	21^-
327.8	753.2+x	11^-	425.5+x	9^-	812.0‡	4830.6+x?	24^-	4018.6+x	22^-
336.0	3601.8+x	21^-	3266.1+x	20^-	846.8	6404.0+z	29^+	5557.2+z	27^+
357.5	2580.1+x	18^-	2222.6+x	17^-	851.0‡	5992.1+y?	24^-	5141.1+y?	22^-
362.5	633.2+y	8^-	270.9+y	6^-	903.1	7307.1+z	31^+	6404.0+z	29^+
377.1	967.3+x	12^-	590.3+x	10^-	935.0‡	8242.1+z?	33^+	7307.1+z	31^+

† Uncertainties not stated by authors. Assignment to ^{170}Lu based on γ(Lu K x ray) coin and on prior assignment of γ-rays in ^{169}Lu and ^{171}Lu.

‡ Placement of transition in the level scheme is uncertain.

Legend

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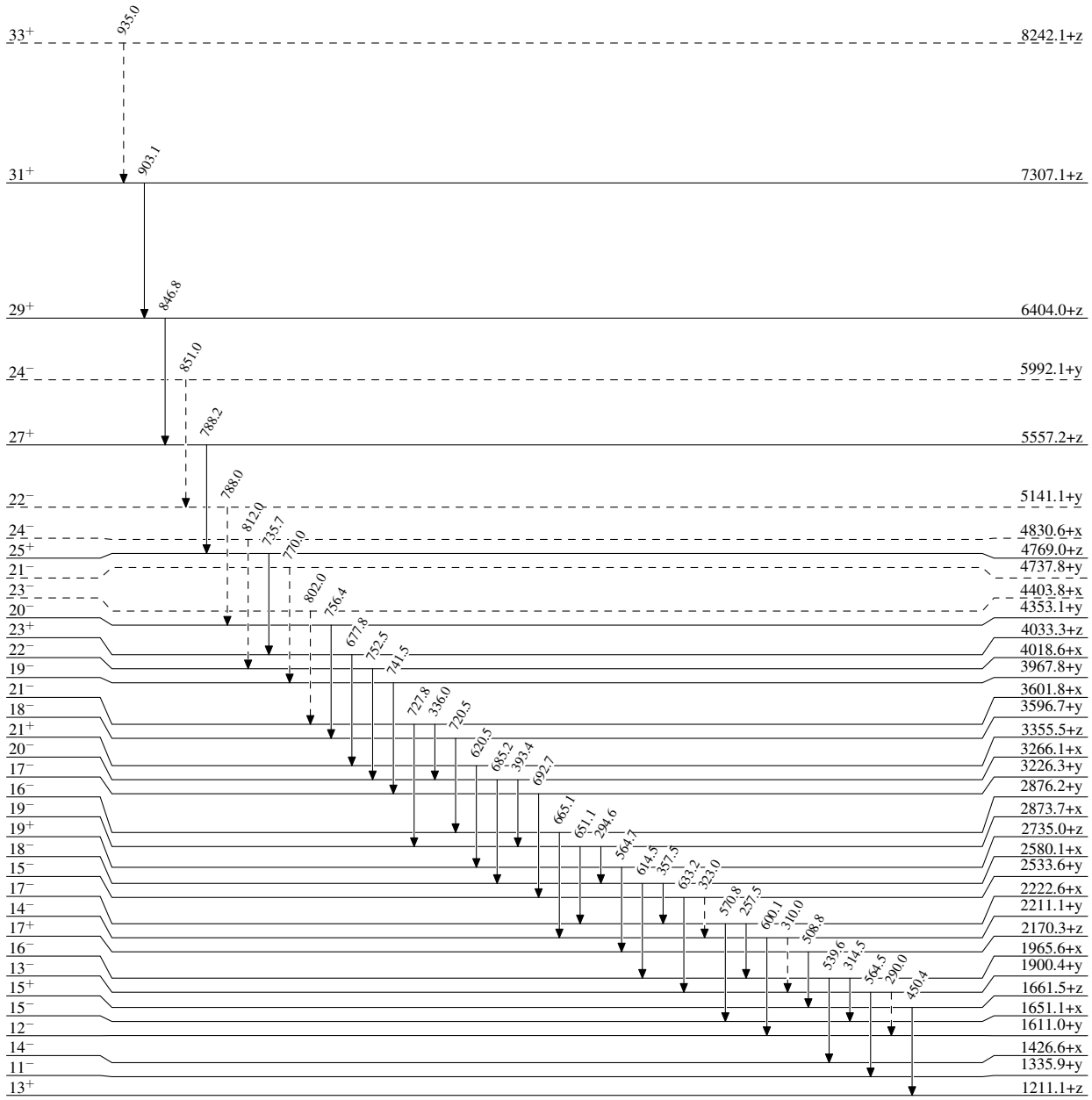
Level Scheme

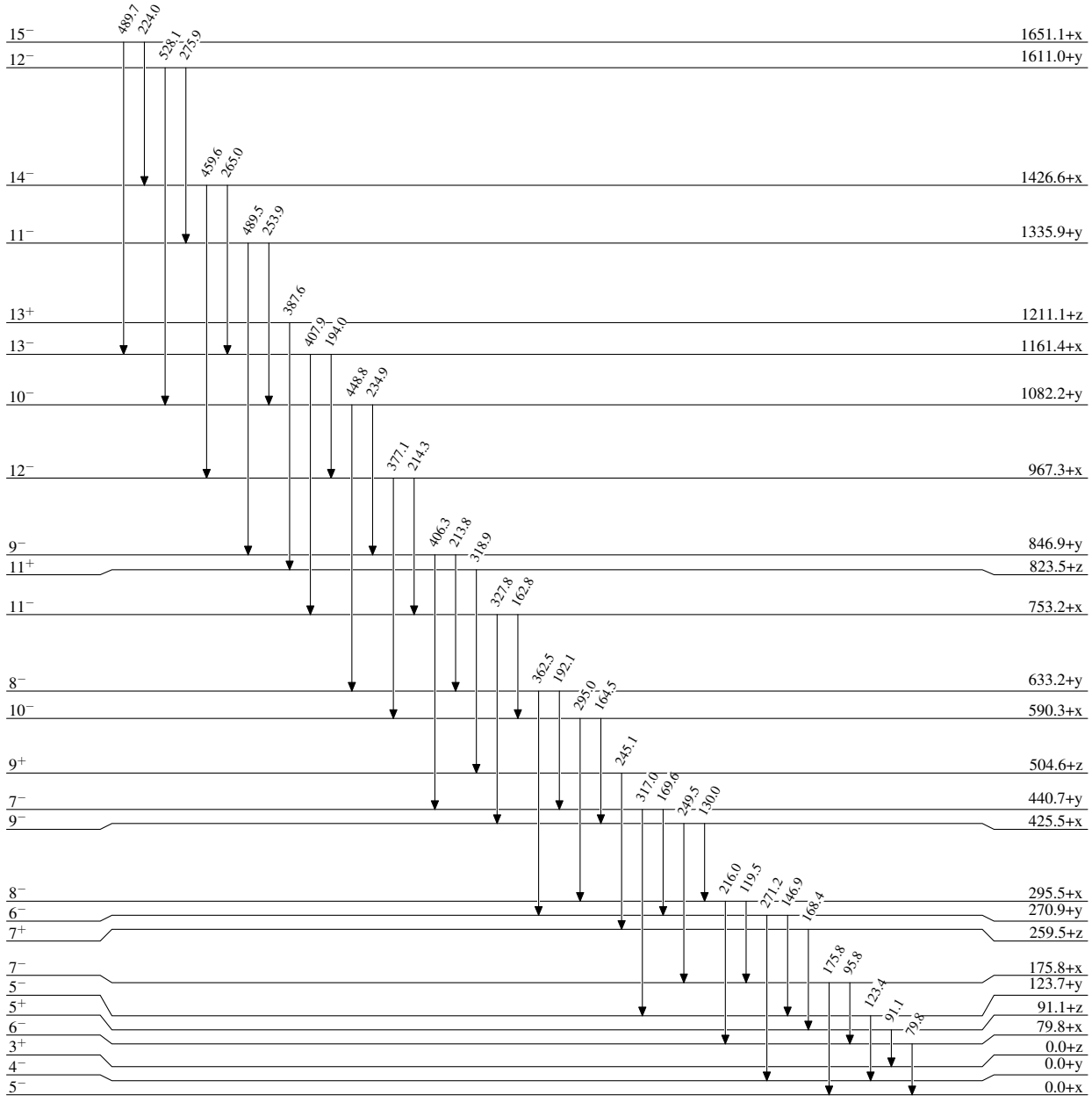
γ Decay (Uncertain)



$^{170}_{71}Lu_{99}$

^{160}Gd(^{14}N,4nγ) 1997Ka30

Level Scheme (continued)



$^{170}_{71}Lu_{99}$

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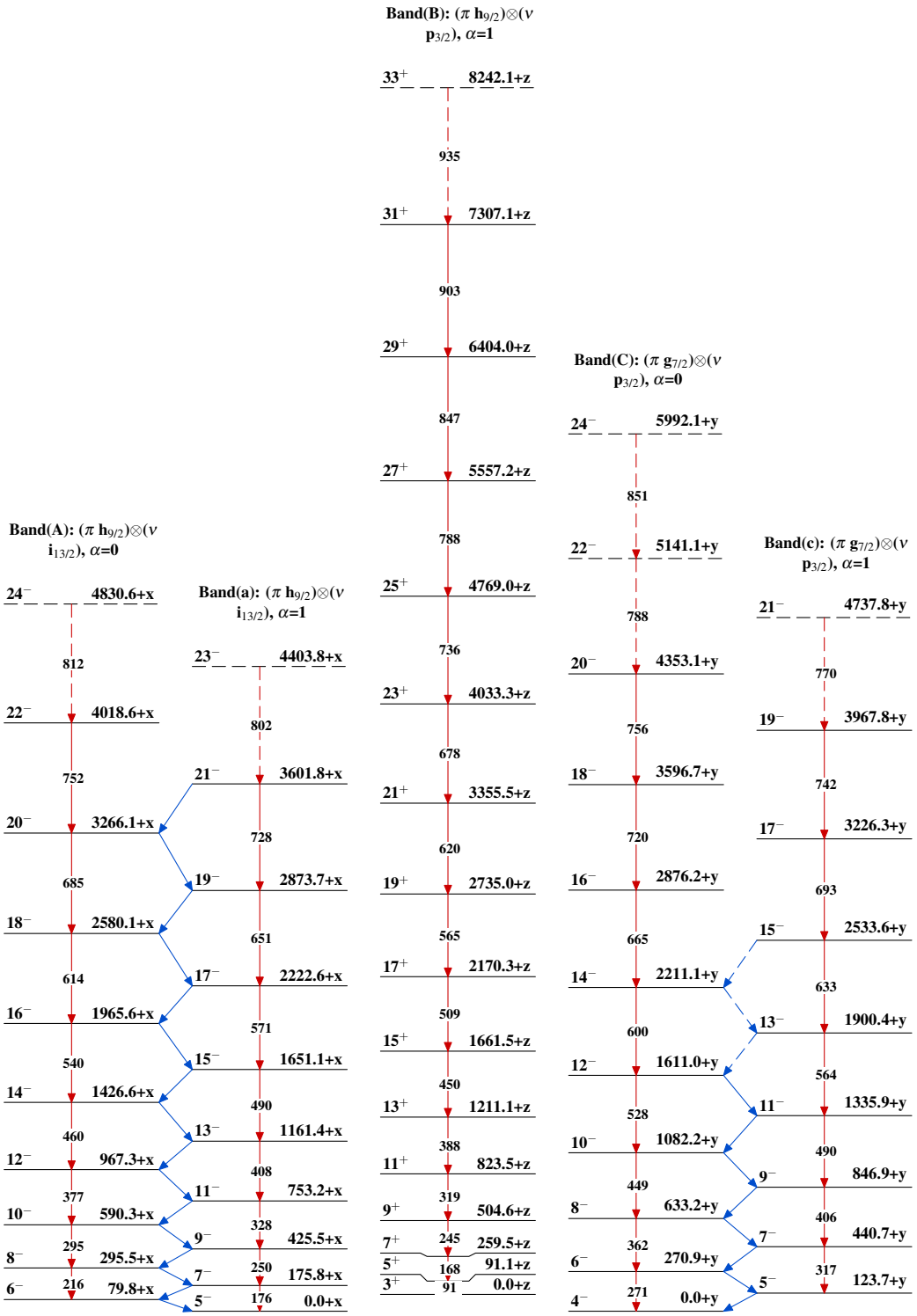

$^{170}_{71}Lu_{99}$