^{175}Lu(p,α) 1982Bu23

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	NDS 75,199 (1995)	31-May-1995

E=17 MeV.
$J^{\pi}(^{175}Lu$ g.s.)=7/2$^+$[404].
Enriched (99.94%) target. FWHM≈20 keV. Measured $\sigma(\theta)$ at 6.5° and at 5° intervals from 10° to 40°. Relative σ's are accurate to≈10% and absolute σ's to≈20%. DWBA calculations. See also 1994Bu16 for discussion of the 2073 $K^{\pi}=4^+$ level which is populated very strongly in (p,α).

Level	dσ/dΩ (μb/sr) (25 °)	Level	dσ/dΩ (μb/sr) (25 °)
0	0.7	2154	1.6
79	1.7	2190	4.4
261	1.0	2213	≈ 2
543	≈ 0.3	2274	1.1
1172	1.8	2298	2.0
1263	1.3	2333	2.5
1375	0.8	2409	7.0 a)
1510	0.3	2467	1.4 a)
1662	1.8	2547	7.0 a)
1701	1.8	2628	≈ 1
1749	1.2	2667	5.6 a)
1800	1.3	2720	1.8 a)
1860	0.9	2740	4.1 a)
1924	0.8	2819	≈ 1 a)
2002	≈ 0.3	2844	2.5 a)
2073	8.1		

a): value reduced by ≈ 30% from that given by 1982Bu23. This was done from an inspection of the spectrum and consultation with one of the authors of 1982Bu23

^{172}Yb Levels

The quasiparticle configurations given here are components deduced from a comparison of experimental and theoretical cross sections (1982Bu23). Other configurations may contribute which are not expected to be populated in this reaction.

E(level)[†]	J$^{\pi}$[‡]	σ(experimental)/σ(predicted)
0[#]	0$^+$	0.35
79[#] 2	2$^+$	0.36
261[#] 2	4$^+$	0.71
543[#] 5	6$^+$	≈3
1172[@] 2	3$^+$	0.25
1263[@] 2	4$^+$	0.24
1375[@] 2	5$^+$	0.35
1510[@] 5	6$^+$	0.5
1662[a] 5	3$^+$	0.24
1701[&] 5	3$^+$	0.24
1749[a] 5	4$^+$	0.22

Continued on next page (footnotes at end of table)

^{175}Lu(p,α) 1982Bu23 (continued)

^{172}Yb Levels (continued)

E(level)[†]	J$^{\pi}$[‡]	σ(experimental)/σ(predicted)
1800[&] 5	4$^+$	0.24
1860[a] 5	(5)$^+$	0.39
1924[&] 5	5$^+$	0.35
≈2002		
2073[b] 5	4$^+$	0.94
2154 5		
2190[b] 5	5$^+$	0.83
≈2213		
2274 5		
2298 5		
2333[b] 5	(6$^+$)	1.8
2409 5		
2467 5		
2547 5		
≈2628		
2667 5		
≈2720		
2740 5		
≈2819		
2844 5		

[†] Uncertainty is≈2 keV for well resolved peaks near the g.s. and≈5 keV for groups at 1500 and higher.

[‡] From Adopted Levels. The values are consistent with $\sigma(\theta)$ data and σ(experimental)/σ(predicted). Calculated $\sigma(\theta)$ and population intensities are from DWBA and nuclear models.

[#] Band(A): K$^{\pi}$=0$^+$ g.s. band. the g.s. band is populated through Configuration=((π 7/2(404))(π 7/2(404))).

[@] Band(B): K$^{\pi}$=3$^+$ band. main Configuration=((ν 5/2(512))(ν 1/2(521))) with 27% 10 admixture (from σ(p,α)) of Configuration=((π 7/2(404))(π 1/2(411))).

[&] Band(C): K$^{\pi}$=2$^+$ band. main Configuration=((ν 5/2(512))(ν 1/2(521))) with 26% 10 admixture (from σ(p,α)) of Configuration=((π 7/2(404))(π 1/2(411))).

[a] Band(D): K$^{\pi}$=3$^+$ band. main Configuration=((ν 11/2(505))(ν 5/2(512))) with 26% 10 admixture (from σ(p,α)) of Configuration=((π 7/2(404))(π 1/2(411))).

[b] Band(E): K$^{\pi}$=4$^+$ band. probable Configuration=((π 7/2(404))(π 1/2(411))).

^{175}Lu(p,α) 1982Bu23

Band(E): $K^{\pi}=4^{+}$ band

(6^{+})	2333
5^{+}	2190
4^{+}	2073

Band(C): $K^{\pi}=2^{+}$ band

5^{+}	1924
4^{+}	1800
3^{+}	1701

Band(D): $K^{\pi}=3^{+}$ band

$(5)^{+}$	1860
4^{+}	1749
3^{+}	1662

Band(B): $K^{\pi}=3^{+}$ band

6^{+}	1510
5^{+}	1375
4^{+}	1263
3^{+}	1172

Band(A): $K^{\pi}=0^{+}$ g.s. band

6^{+}	543
4^{+}	261
2^{+}	79
0^{+}	0

$^{172}_{70}Yb_{102}$