^{231}Pa(d,d′)   1996Le01

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh, Jagdish K. Tuli, and Edgardo Browne	NDS 185, 560 (2022)	31-Aug-2022

1996Le01: E(d)=27 MeV. Measured scattered deuterons at θ=50°, 90°, and 105° using a Q3D magnetic spectrometer at the Munich tandem accelerator facility. FWHM=6-10 keV. Contaminants in the target precluded measurements at θ=5° and 35°. In this angular range the distribution of scattered deuterons shows a distinct structure for the various transferred angular momenta.

^{231}Pa Levels

E(level)[†]	J$^{\pi}$[‡]	Relative I(d)	Comments
0.0[#]	3/2$^-$	100	
9.2[#] 5	1/2$^-$	49.0	
58.9[#] 1	7/2$^-$	31.0	
77.5[#] 1	5/2$^-$	12.2	
109.2 5		30.3	
168.6[#] 1	11/2$^-$	7.4	
192.5[#] 2	9/2$^-$	3.1	
273.5[@] 4	1/2$^+$	0.7	
296.6 4		0.6	
312.0[@] 20	5/2$^+$	0.1	
316.8[@] 3	3/2$^+$	1.7	
329.3[#] 4	15/2$^-$	0.04	
351.5[#] 4	13/2$^-$	0.35	
393.5[@] 15	9/2$^+$	0.04	
411.1[@] 6	(7/2$^+$)	0.35	
424.5 6		0.35	
443.0 5		0.40	
513.5 12		0.13	
535.4[#] 5	19/2$^-$	0.48	
551.2[#] 7	17/2$^-$	0.30	
567.5 5		0.44	
583.5 8		0.20	
631.7 15		0.08	
788.1[#] 10	21/2$^-$&23/2$^-$	0.17	Doublet.
857.3 10		0.16	
874.0 6		0.45	
901.6 8		0.25	
917.6 12		0.15	
944.7 6		0.57	
967.9 6		0.63	
1020.6 12		0.24	
1048.4 6		0.80	
1086.4 6		0.74	
1136.8 5		1.42	
1158.5 10		0.40	
1190.0 15		0.20	
1221.3 8		0.50	

[†] Uncertainties are statistical only, not including from energy calibration.
[‡] As given by 1996Le01 in Table 1.
[#] Band(A): π1/2[530].
[@] Band(B): π1/2[400]+π1/2[660].

^{231}Pa(d,d$'$)   1996Le01

Band(A): $\pi 1/2[530]$

21/2$^-$ &23/2$^-$	788.1

17/2$^-$	551.2
19/2$^-$	535.4

13/2$^-$	351.5
15/2$^-$	329.3

9/2$^-$	192.5
11/2$^-$	168.6

5/2$^-$	77.5
7/2$^-$	58.9

1/2$^-$	9.2
3/2$^-$	0.0

$^{231}_{91}Pa_{140}$

^{231}Pa(d,d′)   1996Le01 (continued)

Band(B): π1/2[400]+π1/2[660]

(7/2$^+$)   411.1

9/2$^+$ 393.5

3/2$^+$ 316.8

5/2$^+$ 312.0

1/2$^+$ 273.5

$^{231}_{91}$Pa$_{140}$

^{231}Pa(d,d′)   1996Le01 (continued)