^{242}Pu(d,t) 1998Wh01,1972Br46

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	C. D. Nesaraja	NDS 130, 183 (2015)	30-Sep-2015

1998Wh01: ^{240} Pu on carbon backing was bombarded with a 12.0 MeV deuteron beam at the Argonne FN tandem Van de Graaff accelerator. The emitted protons were momentum analyzed with an ENGE split-pole magnetic spectrometer and detected at the focal plane with emulsion plates with FWHM= 7.0 keV. (d,p) spectra was measured at 90°, 120 °, and 150°.

1972Br46: ^{240}Pu source that was prepared at Argonne isotope separator was irradiated with 12 MeV deuterons from the Argonne Tandem Van de Graaff accelerator. (d,p) spectra was measured at 90° and 140° using a Browne-Buechner spectrograph with FWHM≈ 17 keV (estimated by the evaluator from authors′ spectrum).

1971El02: ^{240}Pu on carbon backing bombarded by 17 MeV deuterons from the Emperor Tandem Van de Graaff accelerator of the University of Rochester. Triton spectra at 60 ° was analyzed with the ENGE split-pole magnetic spectrometer and detected with emulsion plates with FWHM≈ 25 keV (estimated by the evaluator from the authors′ spectrum). Elastic scattered deuterons were measured with a scintillation counter for intensity normalization and absolute reaction cross sections.

^{241}Pu Levels

E(level)[‡]	J$^{\pi}$[†]	Comments
0[&]	5/2$^+$	
42[&] 2	7/2$^+$	
96[&] 1	9/2$^+$	
162[a] 1	1/2$^+$,11/2$^+$	E(level): Doublet.
171[a] 2	3/2$^+$	
221[a] 3	5/2$^+$	
231[b] 2	9/2$^+$	
244[a] 2	7/2$^+$	
301[b] 2	11/2$^+$	
337[a] 1	9/2$^+$	
373[a] 2	11/2$^+$	
385[b] 3	13/2$^+$	
448[c] 2	11/2$^-$	
505[a] 2	13/2$^+$	E(level): Not included in authors′ table IV, but shown in table V as being populated in (d,t).
571[c] 2	15/2$^-$	
755[d] 1	1/2$^+$	
770[g] 1	1/2$^-$	
780[g] 1	3/2$^-$	
801[e] 1	3/2$^+$,5/2$^+$	E(level): Doublet.
810[g] 1	5/2$^-$	
831[g] 1	5/2$^+$,7/2$^-$	E(level): Doublet.
842[h] 1	1/2$^-$	
852[h] 1	3/2$^-$	
863[#] 2		
898[h] 2	9/2$^+$,5/2$^-$	J$^{\pi}$: See Adopted Levels. E(level): Doublet.
918[#h] 2	7/2$^-$	
932 2		
937[#g] 2	9/2$^+$,11/2$^-$	E(level): Doublet.
950[#] 3		
965[f] 1	1/2$^-$	
974[#] 2		
996[f] 2	3/2$^-$,11/2$^+$	E(level): Doublet.

Continued on next page (footnotes at end of table)

^{242}Pu(d,t) 1998Wh01,1972Br46 (continued)

^{241}Pu Levels (continued)

E(level)‡	E(level)‡	E(level)‡
1008 *2*	1118 *3*	1390 *6*
1062 *3*	1178 *3*	1471 *3*
1090 *3*	1206 *3*	1801@ *4*

† The configuration assignments are those of 1998Wh01 based on data from (d,t) and their ^{240}Pu(d,p) work. The ratio of cross sections at 90° and 150° gives information about the L transfer, and the ratio of (d,p) and (d,t) cross sections gives information about the particle or hole character of the level being populated. The assignments are, in most cases, consistent with those of 1972Br46 and 1971El02. See 1998Wh01 for a discussion of the differences.

‡ From 1998Wh01, except as noted otherwise. The authors give one set of energies for their (d,p) and (d,t) work, averaged over all spectra.

Seen by 1972Br46 but seen only in (d,p) by 1998Wh01. The energy given is that of 1998Wh01 from (d,p).

@ From 1972Br46. The level is not reported by 1998Wh01.

& Band(A): 5/2[622] band.

a Band(B): 1/2[631] band.

b Band(C): 7/2[624] band.

c Band(D): 7/2[743] band.

d Band(E): 1/2[620] band.

e Band(F): 3/2[631] band.

f Band(G): 1/2[501] band.

g Band(H): 1/2[761] + 1/2[631]X0$^-$.

h Band(I): 1/2[620]X0$^-$ + 1/2[631]X0$^-$.

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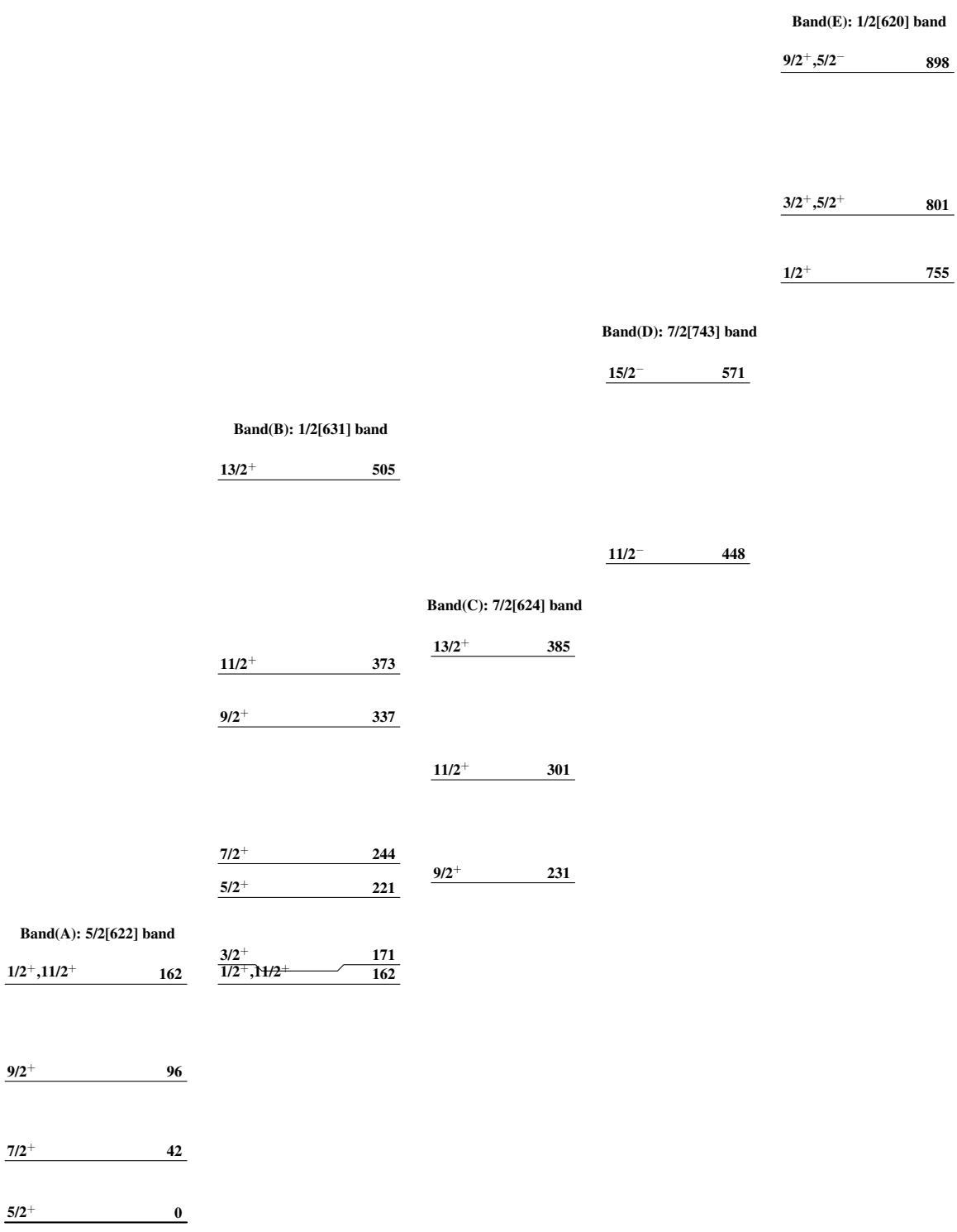

$^{241}_{94}Pu_{147}$

^{242}Pu(d,t) 1998Wh01,1972Br46 (continued)

Band(F): 3/2[631] band

3/2$^-$,11/2$^+$ 996

Band(G): 1/2[501] band

3/2$^-$,11/2$^+$ 996

1/2$^-$ 965

Band(H): 1/2[761] + 1/2[631]X0$^-$

9/2$^+$,11/2$^-$ 937

9/2$^+$,11/2$^-$ 937

Band(I): 1/2[620]X0$^-$ + 1/2[631]X0$^-$

7/2$^-$ 918

9/2$^+$,5/2$^-$ 898

3/2$^-$ 852

1/2$^-$ 842

5/2$^+$,7/2$^-$ 831

5/2$^+$,7/2$^-$ 831

5/2$^-$ 810

3/2$^+$,5/2$^+$ 801

3/2$^-$ 780

1/2$^-$ 770

$^{241}_{94}Pu_{147}$