^{92}Mo(p,d),(d,t),(^{3}He,α)   1976Ka08,1982Ma07

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Coral M. Baglin	NDS 114, 1293 (2013)	1-Sep-2013

Others: 1969Ba21, 1973Ko03, 1973Ko04,1973Mo03, 1973Ta05, 1973Ta07, 1981Du13.

(p,d):
1976Ka08: E(p)=28.0 MeV; 98.45% ^{92}Mo target; θ(lab)=5°−60° (5° steps); magnetic spectrometer, semi, FWHM=11-15 keV.
    DWBA analysis of $\sigma(\theta)$.
Others: 1973Ko03 (E(p)=38.6 MeV), 1973Ko04, 1973Mo03 (40 MeV), 1973Ta07 (52 MeV).

(d,t):
1973Ko03: enriched target. E(d)=40.6 MeV. Semi, FWHM=50 keV. DWBA analysis of $\sigma(\theta)$.
Other: 1973Ta05 (21.4 MeV).

(^{3}He,α):
1969Ba21: E(^{3}He)=18 MeV; 97.6% ^{92}Mo target; semi, θ(lab)=25°−80° (5° steps), FWHM=60-70 keV.
1981Du13: E(^{3}He)=97.3 MeV; 98.5% ^{92}Mo target; θ(lab)=4.5°−20° (4° steps); spectrometer with proportional counter,
    FWHM=170 keV.
1982Ma07: E(^{3}He)=25 MeV; enriched target; θ(lab)=5°−50° (5° steps); magnetic spectrometer plus semi, FWHM=25-30 keV.

The proton separation energy is S(p)=6835 keV 7 (2012Wa38). Several levels observed at energies above S(p) are IAS's; for each
    of these, the corresponding ^{91}Nb level is indicated via a comment.

A theoretical calculation of (d,t) form factors is reported by 1983Na13.

^{91}Mo Levels

E(level)[†]	L[†]	C²S[‡]	Comments
0	4	7.2	
653 3	1	1.70	C²S: p$_{1/2}$ orbital assumed.
1156 3	1	2.27	
1363 3	2	0.084	
1414 3			
1533 3	3	1.85	
1607 5			
1642 5			
1844 5	3	0.014	
1902 3	4	0.52	
2083 3	1	0.16	
2201 6			
2232[#]			
2243[#]			
2300[@]	1	0.08	L and C²S for other component(s) of multiplet not determined.
2345 4	4[&]		
2452 4	4	0.055	L: conflicting assignment of L=3 by 1973Ko03 unconfirmed in later study (1976Ka08).
2496 6			
2537 4	2	0.014	
2566 4	4	0.021	L=3 in (^{3}He,α) (1982Ma07), but L=4 fits $\sigma(\theta)$ almost as well.
2624 6			
2663 6			
2689 7			
2716 4	3	0.52	
2772 6			

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^{92}**Mo(p,d),(d,t),(^{3}He,α)**   **1976Ka08,1982Ma07 (continued)**

^{91}Mo Levels (continued)

E(level)[†]	L[†]	C²S[‡]	Comments
2818 *4*	4	0.28	L=4 in (^{3}He,α) for a 2840 *20* level (1982Ma07) may indicate a doublet in that reaction.
2851 *6*	5	0.047	
2867 *6*	5	0.17	L=3 in (^{3}He,α) for a 2870 *20* level (1982Ma07), but fit to $\sigma(\theta)$ is not good.
2883 *4*	1	0.086	
2914 *5*	(3)	(0.12)	
2941 *5*	(3)	(0.058)	
2964 *6*			
2984 *6*			
3010 *5*	(3)		
3031 *6*	(1)[&]		
3085 *6*			
3126 *6*			E(level): L=(1) for 3120 *20* doublet in (^{3}He,α) (1982Ma07).
3162 *6*			
3191 *6*	1		L: from 1973Ko03.
3230 *6*	(3)[&]		L: authors assign L=3; shown here as tentative because $\sigma(\theta)$ covers limited range of angles.
3307 *6*			
3328 *6*	(2)	(0.008)[a]	L: differs from adopted value (L=4). L(^{3}He,α)=1 for 3330 *20* level, but it is unclear to which level(s) in (p,d) this corresponds.
3351 *6*	(3)	(0.16)[a]	
3398 *6*			
3413 *6*	(3)	(0.016)	
3447 *6*	(2)	(0.016)[a]	L: differs from adopted value and from (^{3}He,α) (viz., L=3, 1982Ma07) and (p,d) (viz., L=1, 1973Ko03).
3472 *6*	(1)[&]		L: shown here as tentative, based on quality of fit to $\sigma(\theta)$.
3524 *6*			
3585 *6*	(4)	(0.096)[a]	Differs from adopted value (L=3) and from L(^{3}He,α)=3 (1982Ma07).
3631 *6*	(1)	(0.022)[a]	L=1 in (^{3}He,α) (1982Ma07).
3645 *6*			
3696 *6*			
3729 *6*			
3759 *6*			
3806 *6*			L(^{3}He,α)=4 for 3790 *20* doublet (1982Ma07).
3836 *6*			
3930 *6*	(4)	(0.061)	
3956 *6*	(3)	(0.076)	
4022 *6*	(1)	(0.029)	L: L(^{3}He,α)=3 for level at 4020 *20* (5 angles only).
4060 *20*	3[&]		Doublet, presumably including the 4069 level. L based on $\sigma(\theta)$ at only 5 angles.
4069 *6*	4	0.11	
4091 *6*			
4116 *7*			
4133 *6*	3	0.073	
4157 *7*			
4186 *7*			
4228 *7*			
4258 *7*			
4276 *7*	3	0.089	L: differs from adopted L=4, but $\sigma(\theta)$ does not appear to rule out L=4.
4301 *6*	(3)[&]		L: shown as tentative due to very poor fit to $\sigma(\theta)$.
4349 *7*			
4385 *7*	3[&]		
4408 *7*			
4432 *7*	3[&]		
4522 *7*	3[&]		
4560 *7*			
4577 *7*			

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^{92}**Mo(p,d),(d,t),(^{3}He,α)**   **1976Ka08,1982Ma07 (continued)**

^{91}Mo Levels (continued)

E(level)[†]	L[†]	C^{2}S[‡]	Comments
4603 7			
4643 7			
4683 7	(4)[&]		L: shown as tentative because shape of $\sigma(\theta)$ poorly defined.
4707 7			
4768 7			
4780 7	(1)[&]		L: shown as tentative because L=3 not conclusively ruled out for 4790 20 level in (^{3}He,α); also, that peak is close to a contaminant peak.
4815 7			
4841 7			
4869 7			L(^{3}He,α)=1 for 4869+4899 doublet (1982Ma07).
4899 7			L(^{3}He,α)=1 for 4869+4899 doublet (1982Ma07).
5.03×10^3 2	(1)		L: shown here as tentative because $\sigma(\theta)$ includes only 4 angles.
5.13×10^{3}[#] 2	(1)		L: shown here as tentative because $\sigma(\theta)$ includes only 4 angles.
5.19×10^3 2	(1)		L: shown here as tentative because $\sigma(\theta)$ includes only 4 angles.
5.23×10^3 2	(3)		L: shown here as tentative because fit to $\sigma(\theta)$ is poor.
5.34×10^3 2	1		
5.42×10^3 2	3		
5.50×10^3 2	1		
5.90×10^{3}[#] 2	1		
5.99×10^3 2	1		
6.06×10^3 2	3		
6.99×10^3 3	4	0.28	Analog of ^{91}Nb(g.s.).
7.12×10^3 3	1	0.18	Analog of ^{91}Nb(105).
8.17×10^3	(3,4)		Analog of ^{91}Nb(1187).
8.34×10^3 3	1	0.15	Analog of ^{91}Nb(1313).
8.66×10^3 3	1	0.33	Analog of ^{91}Nb(1613).
8.87×10^3 3	3	0.41	Analog of ^{91}Nb(1845).
10.15×10^3	3,4		E(level): from fig. 1 and text; 10.17 MeV in fig. 4 of 1981Du13.
10.40×10^3	3,4		
12.42×10^3	3,4		

[†] For E(level)≤4899 keV, data are from (p,d) (1976Ka08), except as noted; for 5030≤E(level)≤6060 keV, data are from (^{3}He,α) (1982Ma07); the 6990-keV to 8870-keV level data are from 1973Ko03 (except for the 8170, for which data are from 1981Du13); data for E(level)>8870 are from (^{3}He,α) (1981Du13). Exceptions are noted. All L values are from DWBA. In some cases, the L values deduced in different measurements are in conflict, probably due to poor resolution of close-lying levels. Weak 6.57 and 7.55 MeV states which appear only in the spectrum of 1981Du13 are not adopted.

[‡] Values are C^{2}S(p,d) from DWBA. For L=1, 2, 3, 4, 5, the orbitals assumed are p$_{3/2}$, d$_{5/2}$, f$_{5/2}$, g$_{9/2}$, h$_{11/2}$, respectively (except as noted). See 1973Ko03 for C^{2}S(d,t); see 1982Ma07 and 1981Du13 for C^{2}S(^{3}He,α).

[#] At least a doublet.

[@] At least a triplet.

[&] From (^{3}He,α) (1982Ma07). The evaluator feels that these values are not certain since angular distributions are rather structureless.

[a] $\sigma(\theta)$ only partially available due to presence of contaminant peaks; L and C^{2}S uncertain.