^{102}Ru(d,p)

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	D. De Frenne	NDS 110, 2081 (2009)	1-Mar-2009

1971Fo01: E=14 MeV; measured: $\sigma(\theta)$; θ=7°, 20°, 35°, 45°, and 60°. Deduced: ^{103}Ru levels, L, spectroscopic factors; DWBA analysis. Enriched target; magnetic spectrograph FWHM=12 keV;
1982Be19: E=45 MeV; measured: $\sigma(\theta)$, $\Delta\sigma(\theta)$=±10%; θ=4°−43° in steps of 2°−5°. Deduced: ^{103}Ru levels, J^π, spectroscopic factors, DWBA analysis. Enriched target; magnetic spectrograph: FWHM=8-12 keV.
1998Ba89: E(d)=15 MeV; measured: $\sigma(\theta)$, θ=8°−55° for 10 angles. Deduced: ^{103}Ru levels, J^π, spectroscopic factors, DWBA analysis. Enriched target; magnetic spectrograph: FWHM=11 keV.
Other: 1969Mi06.

^{103}Ru Levels

E(level)[†]	L[#]	C^2S'[&]	Comments
0.0?[‡]	2[@]	1.44[a]	J^π: suggested by 1982Be19 from (d,p)/(p,d) spectroscopic strength ratio. g.s. not observed by 1998Ba89.
3.3 *7*	2	1.35	
136 *3*	2	0.012	Suggested by 1982Be19 from (d,p)/(p,d) spectroscopic strength ratio.
174 *3*	0	0.75	
215 *3*	4	1.80	
240 *3*	5	3.2	
298 *3*	3	0.40	C^2S': other: 1.50 from 1971Fo01.
347 *3*	2	0.060	
405 *3*	2		E(level): may correspond to (404-406) doublet observed in ^{103}Tc β^- decay and (n,γ). C^2S': C^2S'=0.82 if J=5/2 and C^2S'=0.92 if J^π=3/2.
433[‡] *3*	0[@]	0.027[a]	C^2S': other: 0.08 (1982Be19).
501			E(level): unresolved doublet. L=2 and J=(5/2) suggested by 1982Be19 for one component from (d,p)/(p,d) spectroscopic strength ratio with C^2S'=0.032. L=(1) and J=(3/2) suggested by 1998Ba89 for other component with C^2S'=(0.018).
535[‡]	(2)[@]	0.03[a]	E(level): may correspond to the 541-keV level observed with L=2 and (2J+1)C^2S=0.14 by 1971Fo01. Not observed by 1998Ba89.
553 *3*			Unresolved multiplet of states with excitation energy from 548 to 563 keV with L=2 (J=5/2 and C^2S'=0.074) and L=0 (J=1/2 and C^2S'=0.046) as major components and L=(1) (J=3/2 with C^2S'=0.018) as a small admixture. May partially correspond to the 551-keV state reported with L=0 by 1971Fo01.
591 *3*	2	0.35	J^π=5/2$^+$ suggested by 1982Be19 from (d,t)/(d,p) spectroscopic strength ratio. C^2S': other: 0.22 (1982Be19).
624 *3*	(2)	(0.009)	J^π=(5/2)$^+$ suggested by 1982Be19 from (d,t)/(d,p) spectroscopic strength ratio. C^2S': other: 0.04 (1982Be19).
661.2[‡] *12*	2[@]	0.251[a]	J^π: (3/2)$^+$ suggested by 1982Be19 from (d,t)/(d,p) spectroscopic strength ratio. C^2S': other: 0.18 (1982Be19).
697.4[‡] *11*	4[@]	0.71[a]	C^2S': others: 1.00 (1971Fo01); 0.37 (1982Be19).
736.1[‡] *11*	0[@]	0.053[a]	C^2S': others: 0.064 (1971Fo01); 0.17 (1982Be19).
771? *3*	4	0.30	E(level): observed only by 1998Ba89. C^2S': calculated for J^π=7/2.
773.8 *12*			Unresolved multiplet. A mixture of L=0 ((2J+1)C^2S=0.10) and L=2 ((2J+1)C^2S=0.03) necessary to fit the experimental data. Not observed by 1998Ba89.
906.4[‡] *12*	2[@]	*a*	C^2S'=0.47 for J^π=5/2 and =0.51 for J^π=3/2. E(level): may be associated with 902.96+905.50+907.58 states excited in (n,γ), so might be an unresolved multiplet.
928 *3*	0	0.008	J^π: In disagreement with J^π=(3/2$^-$,5/2$^+$) from (n,γ) data.
1003 *2*	2		C^2S': C^2S'=0.049 for J^π=5/2 and =0.053 for J^π=3/2. Other: 0.09 for J^π=5/2 (1971Fo01).
1057 *5*	(4)	(0.017)	

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^{102}Ru(d,p) (continued)

^{103}Ru Levels (continued)

E(level)†	L#	C^2S'&	Comments
1078 *5*	(4)		C^2S'=0.09 for J^π=9/2 and =0.13 for J^π=7/2.
1105 *5*	0	0.066	C^2S': other: 0.076 (1971Fo01).
1138 *5*			
1182 *5*	2		C^2S'=0.039 for J^π=5/2 and =0.045 for J^π=3/2.
1248 *5*	2		C^2S'=0.165 for J^π=5/2 and =0.186 for J^π=3/2. Other: 0.26 for J^π=5/2 (1971Fo01).
1269 *5*	(1,2)		C^2S'=0.010 for L=1 and =0.026 for L=2. No J^π values given.
1322 *5*	5	1.37	L: other: L=(3,5) and C^2S'=0.4 for L=3 and =1.0 for L=5 (1971Fo01).
1346 *5*	≤3		
1370 *5*	(4,5)		C^2S'=0.29 for L=4; C^2S'=0.41 for L=5, no J^π values given.
1430 *5*	(2,3)		C^2S'=0.039 for L=2; C^2S'=0.047 for L=3, no J^π values given.
1461 *5*	(2,3)		C^2S'=0.052 for L=2; C^2S'=0.047 for L=3, no J^π values given.
1486 *5*			
1554 *5*	(2)		C^2S'=0.134 for J^π=5/2$^+$; C^2S'=0.153 for J^π=3/2$^+$.
1604 *5*			
1642 *5*			
1662 *5*	(2)		C^2S'=0.019 for J^π=5/2$^+$; C^2S'=0.021 for J^π=3/2$^+$.
1699 *5*			
1717 *5*	≤2		
1751 *5*	(1,2)		C^2S'=0.011 for L=1; C^2S'=0.030 for L=2, no J^π values given.
1780 *5*	(2,3)		C^2S'=0.031 for L=2; C^2S'=0.043 for L=3, no J^π values given.
1809 *5*	0	0.081	
1834 *5*			
1876 *5*	(2,3)		C^2S'=0.045 for L=2; C^2S'=0.063 for L=3, no J^π values given.
1910 *5*	(1)		C^2S'=0.019 for J^π=3/2$^-$; C^2S'=0.020 for J^π=1/2$^-$.
1962 *5*	2	(0.35)	C^2S'=0.253 for J^π=5/2$^+$; C^2S'=0.284 for J^π=3/2$^+$ other: C^2S'=0.35 (1971Fo01).
2004 *6*	(1,2)		C^2S'=0.018 for L=1; C^2S'=0.040 for L=2, no J^π values given.
2058 *6*	(2)		C^2S'=0.022 for J^π=5/2$^+$; C^2S'=0.026 for J^π=3/2$^+$.
2082 *6*	2		C^2S'=0.054 for J^π=5/2$^+$; C^2S'=0.062 for J^π=3/2$^+$.
2118 *6*	(2)		C^2S'=0.075 for J^π=5/2$^+$; C^2S'=0.084 for J^π=3/2$^+$.
2137 *6*	(2)		C^2S'=0.016 for J^π=5/2$^+$; C^2S'=0.018 for J^π=3/2$^+$.
2167 *6*	4	0.08	
2207 *6*			
2224 *6*			
2248 *6*			
2280 *6*			
2405 *6*			
2436 *6*			
2489 *6*	≤2		
2515 *6*	0		
2548 *6*	1		C^2S'=0.033 for J^π=3/2$^-$; C^2S'=0.034 for J^π=1/2$^-$.
2578 *6*			
2627 *6*	2		C^2S'=0.044 for J^π=5/2$^+$; C^2S'=0.050 for J^π=3/2$^+$.
2657 *6*			
2694 *6*			
2723 *6*			
2960 *6*			
3015 *6*	(0,1)		C^2S'=0.037 for L=0; C^2S'=0.025 for L=1. No J^π values given.
3062 *6*			
3204 *6*			
3325 *6*			
3512 *6*			

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^{102}Ru(d,p) (continued)

^{103}Ru Levels (continued)

† Unless noted otherwise, from 1998Ba89.
‡ From 1982Be19.
# Deduced from comparison of experimental angular distributions and theoretical DWBA calculations.
@ From 1982Be19.
& C^2S' from 1998Ba89 given and deduced from: $C^2S'=(2J+1)[\sigma(\exp)(\theta)/\sigma(\mathrm{DWBA})(\theta)]/1.55$.
a From 1982Be19.