

¹⁰⁴Ru(p,d), (d,t)

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

1994Du08: (d,t), E(d)=16 MeV. Measured: $\sigma(E(t),\theta)$, $\theta=10^\circ-45^\circ$ (not given by the authors, estimated by the evaluator from published spectra.) Deduced: ¹⁰⁴Ru levels, J^π , spectroscopic factors, DWBA analysis. FWHM=6-8 keV, Enge split-pole spectrograph, enriched target.

1982Be19: (p,d), E(p)=29 MeV. Measured: $\sigma(E(d),\theta)$, $\theta=4^\circ-43^\circ$, deduced: ¹⁰⁴Ru levels, J^π , spectroscopic factors, DWBA analysis. FWHM=5-8 keV, magnetic spectrograph, enriched target.

1970Di05: (d,t), E(d)=17 MeV. Measured: $\sigma(E(t),\theta)$, $\theta=10^\circ-35^\circ$, deduced: ¹⁰⁴Ru levels, J^π , spectroscopic factors DWBA analysis. FWHM=8-10 keV. Magnetic spectrograph. Enriched target.

¹⁰³Ru Levels

E(level) [†]	L [#]	C ² S [@]	Comments
0			E(level): not observed in (d,t).
2.81 [‡] 20	2	1.11	E(level): from Adopted Levels.
135.6 [‡] 10	2	0.072	
174.2 [‡] 10	0	0.29	
212.8 [‡] 10	4	2.07	C ² S: other: C ² S=0.96 (1982Be19).
239.7 [‡] 10	5	1.47	
297.1 [‡] 10	3		L: C ² S=0.16 if J=7/2, C ² S=0.22 if J=5/2.
346.4 [‡] 11	2		L: C ² S=0.10 if J=5/2, C ² S=0.13 if J=3/2.
405.6 [‡] 15	2		L: C ² S=0.35 if J=5/2, C ² S=0.44 if J=3/2.
			E(level): may correspond to (404-406) doublet observed in ¹⁰³ Tc β^- decay and (n, γ).
432.9 [‡] 12	0	0.07	
501.1 [‡] 12	2		L: C ² S=0.17 if J=5/2, C ² S=0.20 if J=3/2.
551.1 [‡] 13			Probably unresolved multiplet (540+548+556 keV) 1970Di05 give L=1 for a 545-keV level.
593.0 [‡] 12	2		L: C ² S=0.21 if J=5/2, C ² S=0.25 if J=3/2.
628.1 [‡] 16	2	0.05	E(level): only observed in (p,d). C ² S: for $J^\pi=5/2^+$ in (p,d).
663.0 [‡] 22	2	0.05	C ² S: from (p,d) for $J^\pi=3/2^+$.
701.2 [‡] 16	4	0.34	C ² S: from (p,d) for $J^\pi=7/2^+$.
738.8 [‡] 12	0	0.086	
777.0 [‡] 12	2		E(level): possible unresolved multiplet with predominant L=2 component. L: C ² S=0.11 if J=5/2, C ² S=0.13 if J=3/2.
855 2			
903.9 [‡] 12	(2)	0.17	E(level): from (p,d). May be associated with 902.96+905.50+907.58 states excited in (n, γ). C ² S: calculated for $J^\pi=3/2^+$.
928 2			
942 2			
1005 2			
1067 2			
1080 2	(4)		L: C ² S=0.40 if J=9/2, C ² S=0.68 if J=7/2.
1109 2	(2)		L: C ² S=0.024 if J=5/2, C ² S=0.031 if J=3/2.
1238 2	2		L: C ² S=0.50 if J=5/2, C ² S=0.62 if J=3/2.
1251 2	2		L: C ² S=0.036 if J=5/2, C ² S=0.043 if J=3/2.
1325 2			
1338 2			
1403 2			
1491 2			

Continued on next page (footnotes at end of table)

$^{104}\text{Ru}(\text{p,d}), (\text{d,t})$ (continued) ^{103}Ru Levels (continued)

<u>E(level)[†]</u>	<u>L[#]</u>	<u>Comments</u>
1559 2	2	L: $C^2S=0.21$ if $J=5/2$, $C^2S=0.25$ if $J=3/2$.
1756 2	1	L: $C^2S=0.05$ if $J=3/2$, $C^2S=0.06$ if $J=1/2$.
1817 2		
1892 2		
1916 2		
2022 2		
2167 2	4	L: $C^2S=1.6$ if $J=9/2$, $C^2S=2.7$ if $J=7/2$.
2217 2		
2232 2		
2299 2	1	L: $C^2S=0.04$ if $J=3/2$, $C^2S=0.05$ if $J=1/2$.
2384 2	1	L: $C^2S=0.07$ if $J=3/2$, $C^2S=0.08$ if $J=1/2$.
2444 2		
2507 2	1	L: $C^2S=0.013$ if $J=3/2$, $C^2S=0.018$ if $J=1/2$.
2520 2		

[†] Unless noted otherwise, from (d,t) ([1994Du08](#)).

[‡] From (p,d) [1982Be19](#).

[#] Unless noted otherwise, from [1994Du08](#) based on comparison of experimental and theoretical angular distributions.

[@] C^2S from [1994Du08](#) given and deduced from: $C^2S=(2J+1)[\sigma(\text{exp})(\theta)/\sigma(\text{DWBA})(\theta)]/3.33$.