^{104}Ru(d,p) 1976Ma49,1971Fo01

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	S. Lalkovski, J. Timar and Z. Elekes	NDS 161, 1 (2019)	1-Apr-2019

1976Ma49: Facility: MP Tandem at Munich; Beam: E(d)=14 MeV; Target: 50 μg/cm^2 enriched to 99.6% in ^{104}Ru, 10 μg/cm^2 carbon backing; Detectors: Q3D spectrograph (FWHM=5 keV), multiwire chamber (ΔE/E≈2.4%), time-of-flight system, one CsI, Faraday cup, parafin and aluminium shields; Measured: E(p), dσ/d$\Omega(\theta)$; Deduced: ^{105}Ru level scheme, L from DWBA analysis with DWUCK2 code, J^π.

1971Fo01: Facility: Argonne FN tandem; Beam: E(d)=14 MeV; Target: 25-50 μg/cm^2 enriched in ^{104}Ru and thin carbon backing (≤20 μg/cm^2); Detectors: magnetic spectrograph (FWHM≈12 keV), photo emulsions, Faraday cup; Measured: dσ/d$\Omega(\theta)$; Deduced: ^{105}Ru level scheme, J^π from DWBA analysis with JULIE code; Also, from the same collaboration: 1968No02.

Others: 1976ZaZV, 1974MlZZ, 1973ShYA, 1969Mi06, 1969MiZY.

^{105}Ru Levels

E(level)[†]	J$^\pi$[‡]	L[@]	S[#@]	Comments
0	3/2$^+$	2	0.009 *4*	configuration: $\nu 2d_{3/2}$.
20.5 *1*	5/2$^+$	2	1.54 *6*	configuration: $\nu 2d_{5/2}$.
108.3 *2*	5/2$^+$	2	0.07 *1*	configuration: $\nu 2d_{5/2}$.
159.2 *3*	1/2$^+$	0	0.74 *6*	configuration: $\nu 3s_{1/2}$.
163.7 *3*	(5/2$^+$)	2	0.18 *4*	configuration: $\nu 2d_{5/2}$.
208.6 *7*	(7/2$^-$)	5	2.7 *4*	configuration: $\nu 1h_{11/2}$.
229.7 *4*	7/2$^+$	4	0.75 *8*	configuration: $\nu 1g_{7/2}$.
246.4 *3*	(3/2$^+$,5/2$^+$)	4,3	0.15 *3*	E(level): Could be unresolved multiplet given two close lying levels are observed at 244 and 246 keV in (n,γ). L: The adopted J^π supports L=4. S: for L=4, $\nu 1g_{7/2}$ in 1976Ma49; Otherwise: 0.04 *1* for L=3, $\nu 1f_{5/2}$ or 0.03 *1* for L=3, $\nu 1f_{7/2}$ in 1976Ma49. configuration: $\nu 1g_{7/2}$, $\nu 1f_{5/2}$, $\nu 1f_{7/2}$.
301.6 *9*	7/2$^+$	4	0.24 *8*	configuration: $\nu 1g_{7/2}$.
321.5 *2*	3/2$^-$	1	0.080 *8*	configuration: $2p_{3/2}$.
441.8 *2*	3/2$^+$,5/2$^+$	2	0.36 *3*	S: for L=2, $\nu 2d_{3/2}$ in 1976Ma49; Also: 0.31 *2* for L=2, $\nu 2d_{5/2}$ in 1976Ma49. configuration: $\nu 2d_{3/2}$ or $2\nu d_{5/2}$.
466.2 *3*	3/2$^+$	2	1.32 *7*	configuration: $\nu 2d_{3/2}$.
491.2 *15*	(1/2,3/2)$^-$	3,1	0.25 *7*	S: for L=3, $\nu 1f_{5/2}$ in 1976Ma49; Also: 0.18 *5* for L=3 $\nu 1f_{7/2}$ or 0.030 15 for L=1, $\nu 2p_{1/2}$ or L=1, $\nu 2p_{3/2}$ in 1976MA49. configuration: $\nu 1f_{5/2}$, $\nu 1f_{7/2}$, $\nu 2p_{1/2}$, $\nu 2p_{3/2}$.
577.6 *7*	5/2$^-$	3	0.21 *4*	S: for L=3, $\nu 1f_{5/2}$ in 1976Ma49; Also: 0.15 *3* for L=3, $\nu 1f_{7/2}$ in 1976Ma49. configuration: $\nu 1f_{7/2}$, $\nu 1f_{7/2}$.
583.0 *8*	3/2$^+$,5/2$^+$	2	0.14	S: for L=2, $2d_{3/2}$ in 1976Ma49; Also: 0.12 *3* for L=2, $2d_{5/2}$ in 1976Ma49. configuration: $\nu 2d_{3/2}$, $\nu 2d_{5/2}$.
625.2 *4*	(7/2$^+$,9/2$^+$)	4,5	0.70 *2*	L: the adopted J^π supports L=4. S: for L=4, $\nu 1g_{7/2}$ in 1976Ma49; Otherwise: 1.1 *4* for L=5, $\nu 1h_{11/2}$ in 1976Ma49. configuration: $\nu 1g_{7/2}$, $\nu 1h_{11/2}$.
631.1 *2*	1/2$^+$	0	0.06 *1*	configuration: $\nu 3s_{1/2}$.
725.7 *20*	(3/2 to 9/2)	≥3	0.46 *23*	S: for L=4, $\nu g_{7/2}$ in 1976Ma49; Otherwise: 0.9 *4* for L=5 $\nu h_{11/2}$ in 1976Ma49. configuration: $\nu 1g_{7/2}$, $\nu 1h_{11/2}$.
759[&] *5*	(3/2,5/2)$^+$	2[a]	0.19[a]	
807[&] *5*	1/2$^+$	0[a]	0.20[a]	
825[&] *5*	3/2$^+$	2[a]	0.46[a]	
841[&] *5*	(7/2,9/2)$^+$	4[a]	0.61[a]	S: calculated for J^π=7/2$^+$.
876[&] *5*	1/2$^+$	0[a]	0.14[a]	
890[&] *5*	3/2$^+$	2[a]	0.11[a]	
914[&] *5*	3/2$^+$,5/2$^+$	2[a]	0.11[a]	

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^{104}Ru(d,p) 1976Ma49,1971Fo01 (continued)

^{105}Ru Levels (continued)

E(level)[†]	Jπ[‡]	L[@]	S[#@]	Comments
994[&] *5*	(3/2+,5/2+)	2[a]	0.15[a]	
1114[&] *5*	(3/2+,5/2+)	2[a]	0.24[a]	
1134[&] *5*	(1/2+ to 7/2+)	(1,3)[a]	(0.08)[a]	L: for L=1 in 1971Fo01; Also: 0.37 for L=3 in 1971Fo01. S: also 0.37 (1971Fo01).
1145[&] *5*	(3/2+,5/2+)	(2)[a]	(0.10)[a]	
1185[&] *5*	(3/2+,5/2+)	2[a]	0.15[a]	E(level): Possible doublet.
1581[&] *10*	(3/2+,5/2+)	(2)[a]	(0.15)[a]	
1931[&] *10*	(3/2+,5/2+)	(2)[a]	(0.20)[a]	

[†] From 1976Ma49, unless otherwise noted.
[‡] From the Adopted Levels.
[#] Label=(2J+1)S.
[@] From 1976Ma49, based on DWBA analysis with DWUCK2, unless otherwise noted; $N=((d\sigma/d\Omega)_{exp}/(d\sigma/d\Omega)_{DWUCK2})(G_{lj}/(2j+1)) = 1.53$, where $G_{lj}=S_{lj}(2J_f+1)/(2J_i+1)$.
[&] From 1971Fo01 and corrected by the evaluators given all level energies are systematically overestimated by the authors by 21 keV.
[a] From 1971Fo01, based on DWBA analysis with JULIE; $N=\sigma_{exp}/\sigma_{JULIE}\ 1/(2J_f+1)S_{lj}=1.65$.