^{100}Ru(p,t) 2012Th07

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Jun Chen, Balraj Singh	NDS 164, 1 (2020)	15-Feb-2020

2012Th07, 2012ThZZ: E=24 MeV from MP tandem at MLL-LMU and TU, Munich facility. Target=96.95% enriched ^{100}Ru. Measured triton spectra and σ at lab angles of 6° and 12° using Q3D magnetic spectrograph. Multiwire gas proportional counter backed by a scintillator provided focal position, energy loss and residual energy of charged particles. FWHM≈7 keV. Main aim of this study was to study excitation of 0^+ states with relevance to matrix elements for $0\nu\beta^-\beta^-$ decay of ^{100}Mo to ^{100}Ru. DWBA analysis of $\sigma(\theta)$ data.

Other measurements including (pol p,t):

1987Na20: (pol p,t) E=22 MeV beam from the University of Tsukuba 12-UD Pelletron. Measured Ay(θ), $\sigma(\theta)$ for first 2^+ state. DWBA calculations. Two-step processes considered.

1982Ao01: (pol p,t) E=22 MeV beam from the University of Tsukuba accelerator. Vector-analyzing power for g.s. DWBA calculations.

1979Ya01 (also 1979Ya09): (pol p,t) E=22 MeV from the University of Tsukuba 12-UD Pelletron. $\sigma(\theta)$ and Ay(θ) for g.s. and first 2^+ state.

1972TaYU: (p,t) E=52 MeV. Measured σ for first four levels.

All data are from 2012Th07 and 2012ThZZ, unless otherwise stated.

^{98}Ru Levels

E(level)	J^π	Relative strength[†]	Comments
0.0	0^+[‡]	85.1	dσ/dΩ=4.15 mb/sr *1* at 6°, 0.686 mb/sr *3* at 15°. σ(6°)/σ(15°)>2. Integrated σ=93 μb (1972TaYU).
652.8 *2*	2^+		J^π: from Adopted Levels. dσ/dΩ=0.0273 mb/sr *6* at 6°, 0.0444 mb/sr *6* at 15°. Integrated σ=9.6 μb (1972TaYU).
1322.1 *6*	0^+[‡]	0.353	dσ/dΩ=0.0153 mb/sr *5* at 6°, 0.0031 mb/sr *2* at 15°. σ(6°)/σ(15°)>2.
1398.3 *3*			dσ/dΩ=0.0158 mb/sr *5* at 6°, 0.0129 mb/sr *5* at 15°. Integrated σ=9.9 μb (1972TaYU) for 1398+1413.
1413.3 *5*			dσ/dΩ=0.0031 mb/sr *2* at 6°, 0.0071 mb/sr *2* at 15°. Integrated σ=9.9 μb (1972TaYU) for 1398+1413.
1816.8 *6*			dσ/dΩ=0.0037 mb/sr *3* at 6°, 0.0089 mb/sr *4* at 15°.
2013.4 *7*			dσ/dΩ=0.0067 mb/sr *5* at 6°, 0.0052 mb/sr *3* at 15°.
2246.8 *5*			dσ/dΩ=0.0046 mb/sr *4* at 6°, 0.0189 mb/sr *6* at 15°.
2278.0 *6*			dσ/dΩ=0.0092 mb/sr *5* at 6°, 0.0094 mb/sr *4* at 15°.
2369.1 *3*			dσ/dΩ=0.0063 mb/sr *4* at 6°, 0.0331 mb/sr *7* at 15°.
2373.9 *8*	0^+[‡]	0.359	dσ/dΩ=0.0130 mb/sr *6* at 6°, 0.0016 mb/sr *2* at 15°. σ(6°)/σ(15°)>2.
2427.5 *5*			dσ/dΩ=0.0088 mb/sr *5* at 6°, 0.0141 mb/sr *5* at 15°.

[†] Deduced from dσ/dΩ at 6°, adjusted for Q value dependence by DWBA calculations, and normalized to ^{102}Ru(p,t)^{100}Ru, DWBA-adjusted g.s. cross section (2012Th07). Values are given for 0^+ states.

[‡] 0^+ assignment from σ(6°)/σ(15°)>2 (2012Th07,2012ThZZ).