^{90}Zr(α,t),^{90}Zr(α,tp) 1971Zi03,2007Va01

History

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

Other: 2001Va10.

2007Va01: ^{90}Zr(α,tp), E=180 MeV; 98% isotopically-enriched ^{90}Zr target; Grand Raiden spectrometer with two multiwire drift chambers In focal plane, backed by two plastic scintillator arrays separated by a 1 cm thick Al plate (FWHM=150 keV); 37 Li-drifted Si detectors At θ(lab)=100°−160° to detect proton emission from ^{91}Nb states; measured triton spectra and t-p coin (FWHM=300 keV for protons); measured $\sigma(\theta)$ for g.s. and 12070 level (θ<10°); DWBA calculations. See also 2001Va10.

1971Zi03: ^{91}Zr(α,t), E=50 MeV. 97.8% ^{90}Zr target. Semi, ΔE-E counter telescope, FWHM=50 keV, θ(c.m.)≈15° to 60°. Measured $\sigma(\theta)$ shows very little structure.

^{91}Nb Levels

E(level)†	J$^{\pi}$	Comments
0		
100 *20*		
1290 *20*		
1600 *20*		
1820 *20*		
1950 *40*		
2300 *20*		
2390 *30*		
2530 *20*		
2610 *20*		
2770 *20*		
2900 *20*		
3010 *20*		
3120 *40*		
3370 *20*		other E: 3430 (2007Va01).
3650 *40*		
4180 *20*		
4770 *30*		other E: 4820 (2007Va01).
4890 *30*		
5020 *30*		
5140 *30*		
5340 *30*		
5950 *50*		
6090 *50*		
9860	(5/2$^+$)	E(level),J$^{\pi}$: from 2001Va10; analog of 5/2$^+$ ^{91}Zr g.s.
12070	(11/2)$^-$	E(level): from 2007Va01. J$^{\pi}$: Analog of ^{91}Zr (11/2)$^-$ 2170 level. $T_{1/2}$-P coin spectra reveal p emission to ^{90}Zr g.s. (45% 3), the lowest-energy 5$^-$(+ 2$^+$) doublet (14% 3; isotropic angular correlation) and to the first 3$^-$ state (41% 10) (2001Va10). spectroscopic factor: 0.038 to 0.052 depending on assumed wave function binding energy; consistent with spectroscopic factor for ^{91}Zr parent state (2007Va01).

† From 1971Zi03, except As noted. additionally, 2001Va01 report broad states At 6 and 9 MeV, consistent with calculations which predict $g_{7/2}$ and $h_{11/2}$ states At those respective energies.