^{92}Zr(p,n) 2000Jo17,1996Gr07,1977Ke01

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Coral M. Baglin	NDS 113, 2187 (2012)	15-Sep-2012

Others: 1988An11, 2001Au02.

2001Au02: E(p)=79.2, 119.4 MeV; measured spectra At θ(lab)≈0.1°, 4°, 8°, 12°, 19.5° (FWHM=415-675 keV); deduced GDR energy (relative to IAS) and splitting between GDR and giant spin-dipole resonance.

2000Jo17: E(p)=35 MeV; NE213 scin, tof; >95% enriched ^{92}Zr target; measured σ(θ) for g.s. analog; macroscopic DWBA calculations.

1996Gr07: E(p)=26.0 *1* MeV; pulsed beam; >95% enriched ^{92}Zr target; FWHM=125-200 keV at E(n)≈12.5 MeV; θ(lab)=3°, 9°, 15° for 20 min flight path, and 27°, 33°, 46°, 53° for 7.5 min flight path; measured E(n), σ(θ) (θ(c.m.)≈3° to 30°); quasiparticle model, shell model and random phase approximation calculations.

1977Ke01: E(p)=4.25-5.30 MeV; pulsed beam; FWHM=35 keV for E(n)≈500 keV; θ(lab)=0°−90°. Measured: E(n) (by time of flight); enhancement in relative yields of the final states both at the E(p)=5055 keV $d_{5/2}$ IAR in ^{93}Nb and off-resonance.

1988An11: E(p)=18.0 *1* MeV and 25.0 *1* MeV; pulsed beam; >95% enriched ^{92}Zr target; θ(lab)=3.5°−159° (16 angles); measured E(n) (time of flight, NE213 scintillators), σ(θ); identified analogs of ^{92}Zr(g.s.) and ^{92}Zr(934 level) (E(n)=12.8 MeV and 11.9 MeV, respectively, at E(p)=25 MeV and θ(lab)=16.7°).

^{92}Nb Levels

E(level)[†]	Jπ[‡]	L[#]	Comments
0			
140 *15*			
228 *15*	2−		
285 *15*			
390 *15*	3−		
482 *15*			
978 *15*	0[a]		
1095 *15*	1+	(0)	
1152 *15*	2−		
1322[@] *15*	2−,3−		
1346 *15*	2+,1−		
1420[&] *15*	[&]		
1485 *15*	1+		
1556[b] *15*	[b]		
1647 *15*			
1670 *15*			
1688? *15*			
1741 *15*	(3+)[c]		
1770 *15*			
3000[d]			
3150[d]			
3530[d]		(0)	
5680[d]		(0)	
5920[d]		(0)	
6280[d]		(0)	
9030[d]		0	L=0 from DWBA analysis (2000Jo17). Analog of 0+ ^{92}Zr g.s.
9956			E(level): from Adopted Levels; 1996Gr07 and 1988An11 identify level in spectrum of fig. 1 but do not specify its energy. possible analog of 2+ ^{92}Zr(934).

† From 1977Ke01, except as noted. Of the states observed by 1977Ke01, the 0, 290 and 1090 levels are reported by 1996Gr07

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^{92}Nb Levels (continued)

also. Note that 1996Gr07 report a cluster of additional unresolved levels in the vicinity of 4750 keV.

‡ Authors′ values based on comparison of data with calculations of IAR enhancements and off-resonance yields using the statistical compound-nucleus model (1977Ke01). Note that this model is parameter dependent.

From 1996Gr07, based on similarity of $\sigma(\theta)$ to that expected by authors for L=0, except As noted.

@ The extremely large observed IAR enhancement can be explained only if this is a doublet with $J^{\pi}=3^{-}$ or 2^{-} for both states (1977Ke01). (p,nγ) measurements indeed show two levels, at 1310 and 1324 keV.

& Unresolved triplet; authors′ deduced $J^{\pi}=(3^{-})$ unreliable.

[a] J=0 from (p,n). This assignment conflicts with observation of polarized deexcitation γ in (p,nγ) (1979Ba54) and evaluator does not adopt it.

[b] Doublet: γ decay data from (p,nγ) (1975Ke12) used to apportion relative enhancements and off-resonance yields for the two states. Authors favor (1^{-}) for 1554-level, J=4 for the 1566 level.

[c] (1^{-}) possible, but (3^{+}) preferred (1977Ke01).

[d] From 1996Gr07; uncertainty not stated by authors.