^{92}Zr(p,p′), (pol p,p) IAR 1970Ke02

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Coral M. Baglin	NDS 112, 1163 (2011)	15-Dec-2010

Includes ^{92}Zr(p,p′γ) and ^{92}Zr(p,n) IAR studies.

Others: 1965Ro23, 1968Th07, 1969El08, 1969Wi15, 1974Cu04.

1974Cu04: (p,p′γ); E(p)=4.85-5.25 MeV, θ(lab)=30°, 45°, 90°; measured angular correlation through ^{92}Zr(2$^+$, 934 level) and ^{93}Nb(4$^+$, 1494 level) in vicinity of analog of ^{93}Zr(g.s.).

1970Ke02: (p,p′); E(p)≈5.8 MeV to 10.0 MeV, 95% ^{92}Zr target, cooled Si(Li) detectors, θ(lab)=60°−170° (10° steps), FWHM≈40 keV; deduced E, Γ, partial Γ_p for each IAS (from S-matrix analysis of excitation functions across IAS), and L for scattered protons from p′(θ) measured on resonance.

1969Wi15: (pol p,p); E(pol p)≈5.0-8.3 MeV, surface barrier detectors, measured energy and angle dependence of analyzing power for elastic scattering; deduced E, J$^\pi$, Γ, and Γ_{p0} for IAS.

1969El08: (pol p,p); E(pol p)=4.65-8.65 MeV; deduced E, Γ, Γ_{p0}, determined J$^\pi$ for IAS.

1965Ro23: (p,p), (p,n); E(p)≈5.75-6.25 MeV, 1-5 keV thick targets; measured excit across ^{93}Zr(947 level) analog; deduced Γ_{p0} and Γ (see also 1968Th07).

Partial Γ_p (1970Ke02) for protons feeding g.s., 934, 1382, 1847 and/or 2067 levels of ^{92}Zr are given in comments. Γ_{p0} deduced by 1969Wi15 and 1969El08 agree with data of 1970Ke02 within better than a factor of 2.

^{93}Nb Levels

E(level)[†]	J$^\pi$[‡]	$T_{1/2}$[@]	L[&]	E(p)(lab)[a]	Comments
11059	5/2$^+$	13 keV *5*		5070	Γ_{p0}=4 keV. All data from 1969Wi15. Analog of ^{93}Zr(g.s.).
11981 *5*	1/2$^+$[b]	90 keV *9*	0	6000	E(level): from E(p)=6002.5 *50* from 1968Th07. Other Γ: 80 keV *6* (1968Th07). Γ_{p0}=45 keV *5* (1970Ke02), 37 keV *3* (1968Th07). Analog of ^{93}Zr(947 level).
12503	3/2$^+$	38 keV *3*	2	6530	Γ_{p0}=8.0 keV *8*; Γ_{p1}=5.2 keV *15*; Γ_{p3}=0.72 keV *2*; Γ_{p4}=1.8 keV *4*. Analog of ^{93}Zr 1425 or 1450 level.
12993	1/2$^+$[b]	42 keV *3*	0	7025	Γ_{p0}=10 keV *1*; Γ_{p2}=3.5 keV *11*; Γ_{p4}=0.45 keV *22*. Possible analog of ^{93}Zr 1910 or 1918 level.
13542		68 keV *5*		7580	Γ_{p3}≈3.9 keV *5*. Possible analog of ^{93}Zr 2458 or 2474 level.
13581	3/2$^+$	45 keV *5*	(2)	7620	Γ_{p1}≈3.0 keV *6*. Possible analog of ^{93}Zr 2531 or 2548 level.
13839	3/2$^+$	63 keV *3*	2	7880	Γ_{p0}=14.0 keV *14*; Γ_{p1}=5.4 keV *18*; Γ_{p2}=1.8 keV *3*; Γ_{p3}=3.3 keV *7*; Γ_{p4}=0.71 keV *25*. Possible analog of ^{93}Zr 2770 level.
14091		30 keV *3*	4	8135	Γ_{p0}=1.1 keV *3*. Possible analog of ^{93}Zr 3077 level.
14363	5/2$^+$[#]	51 keV *5*	2	8410	Γ_{p0}≤2.0 keV; Γ_{p2}≥8.0 keV. Possible analog of ^{93}Zr 3391 level.
14477	7/2$^-$[#]	43 keV *7*	3	8525	Γ_{p0}=2.0 keV *3*; Γ_{p2}=1.0 keV *5*; Γ_{p4}≈14.2 keV. Possible analog of ^{93}Zr 3421 level.

[†] From S(p)=6043.4 *16* (2003Au03) and E(p) for resonance (1970Ke02). ΔE not stated; agreement with E(p) from 1969Wi15 is excellent.

[‡] From L and analyzing power data of 1969Wi15.

[#] From L and analyzing power data of 1969El08.

[@] Γ from 1970Ke02; weighted average of all determinations. Consistent with data of 1969El08 and 1969Wi15.

[&] From 1970Ke02.

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^{92}Zr(p,p′), (pol p,p) IAR 1970Ke02 (continued)

^{93}Nb Levels (continued)

[a] E(p)(lab) for resonance (1970Ke02); ΔE not stated by authors. 60 keV correction advised by authors has been applied, thereby producing excellent agreement with E(p) from 1969Wi15.
[b] L=0 from interference pattern in excitation functions in (p,p) (1970Ke02).