Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	NDS 105,223 (2005)	22-Jun-2005

S(n)=1.65×10^4 *syst*; S(p)=4.4×10^3 *16*; Q(α)=−3.7×10^3 *15* 2012Wa38
Note: Current evaluation has used the following Q record 16230 syst 4.4E3 16 −3.7E3 15 2003Au03.
Δ(S(n))=1540; S(p)=4450 *1560*, Q(α)=3700 *1490*; Q(εp)=2670 *1490* (2003Au03).
^{80}Zr is an important 'waiting-point' (N=Z) nuclide in the rapid-proton capture (rp) process and in x-ray burst simulations.
^{80}Zr nucleus first identified through (evaporation residues)(prompt γ)-coin studies in ^{24}Mg(^{58}Ni,2nγ) reaction (1987LeZT,1987Li14). Same reaction used in 2001La31 in mass measurement and in 2000Re03 to study the yrast sequence of levels up to 10$^+$.
Other reactions for production of ^{80}Zr:
2002Fa13, 2001Ki13: Fragmentation of ^{112}Sn ion beam at 1 GeV/nucleon with Be target; fragment recoil separator.
1998Is06: 98Al(^{58}Ni,X) E=300 MeV. Measured mass, tof spectrometer.
Mass measurement: 2001La31, 1998Is06.
Additional information 1.

^{80}Zr Levels

Cross Reference (XREF) Flags

A ^{24}Mg(^{58}Ni,2nγ)

E(level)	J$^\pi$ †	T$_{1/2}$	XREF	Comments
0.0‡	0$^+$	4.6 s *6*	A	%ε+%β^+=100; %εp=? T$_{1/2}$: from 2003Au02; weighted average of 4.1 s *+8−6* (2000Re03) and 5.3 s *+11−9* (2001Ki13,2002Fa13). Calculation of cluster decay of ^{80}Zr: 1991Gu03. β_2≈0.4 (from energies of 2$^+$ and 4$^+$ states (1987Li14)). 1991Zh23 discuss this state in terms of superdeformation.
288.9‡ *2*	(2$^+$)		A	
825.8‡ *4*	(4$^+$)		A	
1605.0‡ *7*	(6$^+$)		A	
2610.0‡ *12*	(8$^+$)		A	
3789.0‡ *16*	(10$^+$)		A	

† From 2001Fi13 based on $\gamma(\theta)$ data and systematics of population of yrast sequence in even-even nuclei.
‡ Band(A): g.s. band.

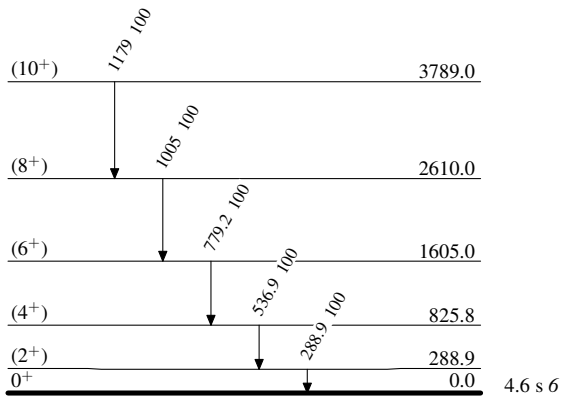
γ(^{80}Zr)

E$_i$(level)	J$_i^\pi$	E$_\gamma$	I$_\gamma$	E$_f$	J$_f^\pi$
288.9	(2$^+$)	288.9 *2*	100	0.0	0$^+$
825.8	(4$^+$)	536.9 *3*	100	288.9	(2$^+$)
1605.0	(6$^+$)	779.2 *5*	100	825.8	(4$^+$)
2610.0	(8$^+$)	1005 *1*	100	1605.0	(6$^+$)
3789.0	(10$^+$)	1179 *1*	100	2610.0	(8$^+$)

Adopted Levels, Gammas

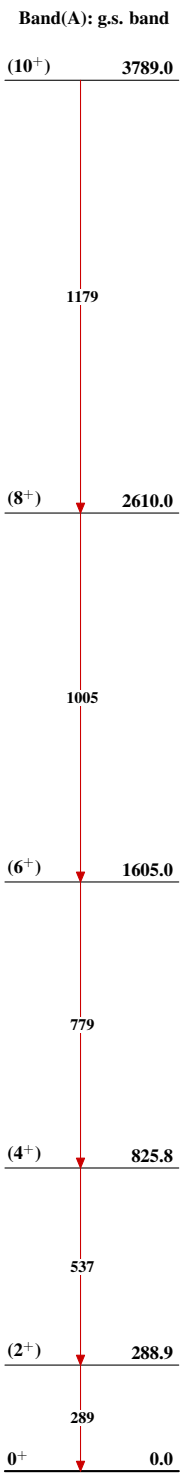
Level Scheme

Intensities: Relative photon branching from each level



$^{80}_{40}Zr_{40}$

Adopted Levels, Gammas



$^{80}_{40}Zr_{40}$