

Adopted Levels, Gammas

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	Ameenah R. Farhan, Balraj Singh		NDS 110,1917 (2009)	30-Jun-2009

$Q(\beta^-) = -1.12 \times 10^4$ syst; $S(n) = 1.38 \times 10^4$ syst; $S(p) = 2.0 \times 10^3$ syst; $Q(\alpha) = -3.0 \times 10^3$ syst [2012Wa38](#)

Note: Current evaluation has used the following Q record -10820 syst 13690 syst 2010 syst-3040 syst

[2009AuZZ,2003Au03](#).

$\Delta Q(\beta^-) = 640$, $\Delta S(n) = 410$, $\Delta S(p) = \Delta Q(\alpha) = 400$ (syst, [2009AuZZ,2003Au03](#)).

$Q(\epsilon p) = 5010$ 400, $s(2n) = 29970$ 640, $s(2p) = 6630$ 400 (syst, [2009AuZZ, 2003Au03](#)).

[1992Ye04](#): ⁵⁸Ni(⁹²Mo,X), E=70 MeV/nucleon; measured fragment mass, charge. A1200 beam analysis device. First evidence for ⁷⁸Y isotope.

[1998Uu01](#): ⁴⁰Ca(⁴⁰Ca,pn), E=125 MeV. Measured β^+ , γ , $(\beta^+)\gamma(t)$.

[2001Ki13](#), [2002Fa13](#), [2007WeZX](#): ¹¹²Sn ions, 1 GeV/A, on Be target, fragments isotopically separated. Si stack detectors.

[2001Ga24](#), [1998Lo17](#) (also [1999Lo07](#)): ⁹²Mo⁺³⁷, 60 MeV/A on Nickel target, fragments separated by LISE3 separator. Measured $\beta^+(t)$, Si strip detectors.

[Additional information 1](#).

⁷⁸Y Levels

Cross Reference (XREF) Flags

A ⁴⁰Ca(⁴⁰Ca,pn γ)

E(level)	J ^{π}	T _{1/2}	XREF	Comments
0 [‡]	(0 ⁺)	53 ms 8	A	$\% \epsilon + \% \beta^+ = 100$; $\% \epsilon p = ?$ T=1 T _{1/2} : from timing of β radiation. Weighted average of 50 ms 8 (2001Ga24) and 55 ms +9-6 (2001Ki13,2002Fa13,2007WeZX). Other: 47 ms 5 (2007Na13) from timing of 281 γ correlated with positrons from ⁷⁸ y decay. The 281 γ is possibly from a level of this energy in ⁷⁸ y. Since assignment of 281 γ is not yet certain, the half-life from 2007Na13 is not used in the averaging procedure. Weighted average would be 49 ms 5 if this half-life is included.
0+x	(5 ⁺)	5.8 s 6	A	J ^{π} : from syst of N=Z nuclides; possible super-allowed Fermi transition, assumed to be the single g.s. to g.s. transition (2001Ga24). Proposed configuration= $\nu 5/2[422] \otimes \pi 5/2[422]$, T=1 (1998Uu01) as IAS of ⁷⁸ Sr g.s. $\% \epsilon + \% \beta^+ = 100$; $\% \epsilon p = ?$ T=0 E(level), J ^{π} : $x \leq 500$ (1998Uu01), estimated from 2-quasiparticle rotor model calculations as a function of deformation without residual p-n interaction. Inclusion of residual p-n interaction also predicts a low-lying 5 ⁺ state but in that case it may be g.s., depending on the value of the deformation parameter. Possible β feeding of 4 ⁺ and 6 ⁺ states in ⁷⁸ Sr supports 5 ⁺ assignment. Proposed configuration= $\nu 5/2[422] \pi 5/2[422]$, T=0 (1998Uu01). T _{1/2} : from timing of γ rays. Average of 5.7 s +7-6 (2007WeZX, 2002Fa13,2001Ki13) and 5.8 s 6 (1998Uu01).
281? [‡]	(2 ⁺) [†]		A	T=1
787? [‡]	(4 ⁺) [†]		A	T=1

[†] Possible T=1 g.s. band member corresponding to a similar band in ⁷⁸Sr.

[‡] Band(A): Possible T_{1/2}=1 g.s. band.

Adopted Levels, Gammas (continued) $\gamma(^{78}\text{Y})$

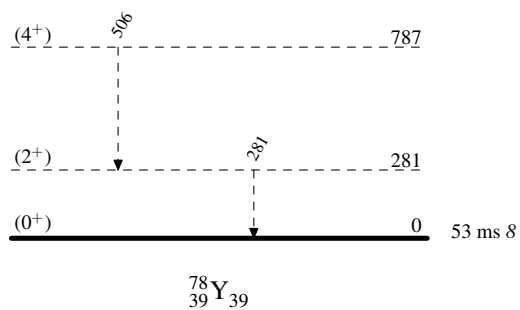
<u>$E_i(\text{level})$</u>	<u>J_i^π</u>	<u>E_γ</u>	<u>E_f</u>	<u>J_f^π</u>	<u>Comments</u>
281?	(2 ⁺)	281 ^{†‡}	0	(0 ⁺)	E_γ : strongest γ ray is correlated with positrons decaying with 47 ms 5 half-life (2007Na13).
787?	(4 ⁺)	506 ^{†‡}	281?	(2 ⁺)	

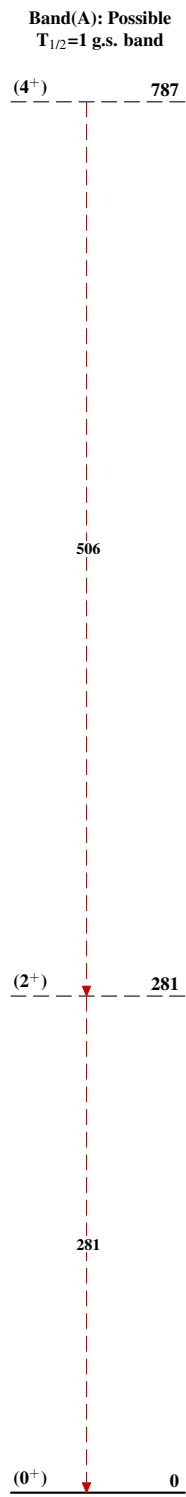
[†] Tentative assignment based on identification as analog of 504 and 278 γ rays in $4\pm > 2\pm > 0^+$ g.s. band in ^{78}Sr .

[‡] Placement of transition in the level scheme is uncertain.

Adopted Levels, Gammas

Legend

Level Scheme-----▶ γ Decay (Uncertain)

Adopted Levels, Gammas ${}^{78}_{39}\text{Y}_{39}$