

⁸²Se(¹⁹F,p3n γ) 2001Bu01

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	N. Nica	NDS 111, 525 (2010)	19-Nov-2009

E=68 MeV, 92% enriched target, energy and efficiency calibration with ¹⁵²Eu source. Measured E γ , I γ , $\gamma\gamma$, neutron- γ , proton- γ coin using Ge detectors for gamma rays and NE213 for neutrons and Δ E-E Si detectors for charged particles at different angles. measured angular distributions In single and n γ coin mode, and DCO ratios. IBFM theoretical calculations.

⁹⁷Mo Levels

E(level) [†]	J π [‡]	E(level) [†]	J π [‡]	E(level) [†]	J π [‡]	E(level) [†]	J π [‡]
0.0 [#]	5/2 ⁺	1436.71 & 10	11/2 ⁻	2712.21 @ 18	17/2 ⁺	3747.72 @ 23	21/2 ⁺
658.14 @ 8	7/2 ⁺	1920.27 [#] 13	(13/2 ⁺)	2725.01 & 18	19/2 ⁻	4472.42 @ 25	25/2 ⁺
1116.67 [#] 8	9/2 ⁺	2002.11 & 15	15/2 ⁻	2828.71 @ 20	19/2 ⁺	4518.42 & 23	27/2 ⁻
1409.41 @ 10	11/2 ⁺	2433.91 @ 15	15/2 ⁺	3571.42 & 20	23/2 ⁻	5502.33 & 25	31/2 ⁻

[†] From a least squares fit to E γ 's assuming Δ E γ = \pm 0.1 keV.

[‡] ADOPTED by 2001Bu01; can differ from adopted values (see Adopted Levels dataset).

[#] Band(A): ν d_{5/2} band.

@ Band(B): ν g_{7/2} band.

& Band(C): ν h_{11/2} band.

γ (⁹⁷Mo)

The population of P3N evaporation channel estimated to Be 5% of the total fusion cross section (28 mb).

The assignment of γ 's to ⁹⁷Mo had been confirmed by observing all of them In coin with both neutrons and protons, but not with α particles.

DCO ratios were measured from an asymmetric $\gamma\gamma$ coin matrix with one detector At 90° and the other At 45°. They were measured In quadrupole gates, unless otherwise stated. According to 2001Bu02 the DCO ratio for a dipole transition is close to 0.5 when gating on a quadrupole transition and 1.0 when gating on a dipole transition; and the DCO ratio for a quadrupole transition is close to 1.0 when gating on a quadrupole transition and 2.0 when gating on a dipole transition.

Legendre polynomial coefficients are determined from angular distributions measured In coin with neutrons.

E γ	I γ [†]	E _i (level)	J π _i [†]	E _f	J π _f [†]	Mult. [‡]	Comments
116.5	18.8 15	2828.71	19/2 ⁺	2712.21	17/2 ⁺	D	A ₂ =-0.06 5. A ₄ =-0.12 6. DCO=0.45 12.
278.3	33.9 17	2712.21	17/2 ⁺	2433.91	15/2 ⁺	D	
292.7	14.3 11	1409.41	11/2 ⁺	1116.67	9/2 ⁺		
320.2	65.4 23	1436.71	11/2 ⁻	1116.67	9/2 ⁺	D	DCO=0.57 6. A ₂ =-0.45 11. A ₄ =+0.05 14.
458.6	5.0 20	1116.67	9/2 ⁺	658.14	7/2 ⁺		
565.4	75 3	2002.11	15/2 ⁻	1436.71	11/2 ⁻	(E2)	DCO=1.80 24 (dipole gated). A ₂ =+0.35 5. A ₄ =-0.10 6.
658.1	46.9 24	658.14	7/2 ⁺	0.0	5/2 ⁺	D	DCO=0.50 11.
722.9	70 5	2725.01	19/2 ⁻	2002.11	15/2 ⁻	(E2)	DCO=1.06 16.
724.7	16 4	4472.42	25/2 ⁺	3747.72	21/2 ⁺	(E2)	DCO=2.3 7 (dipole gated).
751.3	22.9 18	1409.41	11/2 ⁺	658.14	7/2 ⁺	(E2)	DCO=2.0 4 (dipole gated).
778.4	16 4	1436.71	11/2 ⁻	658.14	7/2 ⁺		

Continued on next page (footnotes at end of table)

$^{82}\text{Se}(^{19}\text{F},\text{p}3\text{n}\gamma)$ **2001Bu01** (continued) $\gamma(^{97}\text{Mo})$ (continued)

E_γ	I_γ^\dagger	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. ‡	Comments
803.6	26 5	1920.27	(13/2 ⁺)	1116.67	9/2 ⁺	Q	Mult.: cited by 2001Bu01 As from 1971Le20 ; E2 In $^{96}\text{Zr}(\alpha,3\text{n}\gamma)$ (same REF.).
846.4	47 5	3571.42	23/2 ⁻	2725.01	19/2 ⁻	(E2)	DCO=0.87 18.
919.0	20 3	3747.72	21/2 ⁺	2828.71	19/2 ⁺	D	DCO=1.20 25 (dipole gated).
947.0	31 3	4518.42	27/2 ⁻	3571.42	23/2 ⁻	(E2)	DCO=0.88 17.
983.9	23 3	5502.33	31/2 ⁻	4518.42	27/2 ⁻	(E2)	DCO=0.87 26.
1024.5	27 4	2433.91	15/2 ⁺	1409.41	11/2 ⁺	(E2)	DCO=2.4 4 (dipole gated).
1116.7	100 5	1116.67	9/2 ⁺	0.0	5/2 ⁺	(E2)	DCO=1.7 3 (dipole gated). A ₂ =+0.50 6. A ₄ =-0.06 8.

† From the spectrum At 55° measured In coin with protons, except for 778.4 γ , 846.4 γ , and 947.0 γ (contaminated with transitions In ^{96}Mo) which were estimated from gates on the symmetric $\gamma\gamma$ matrix.

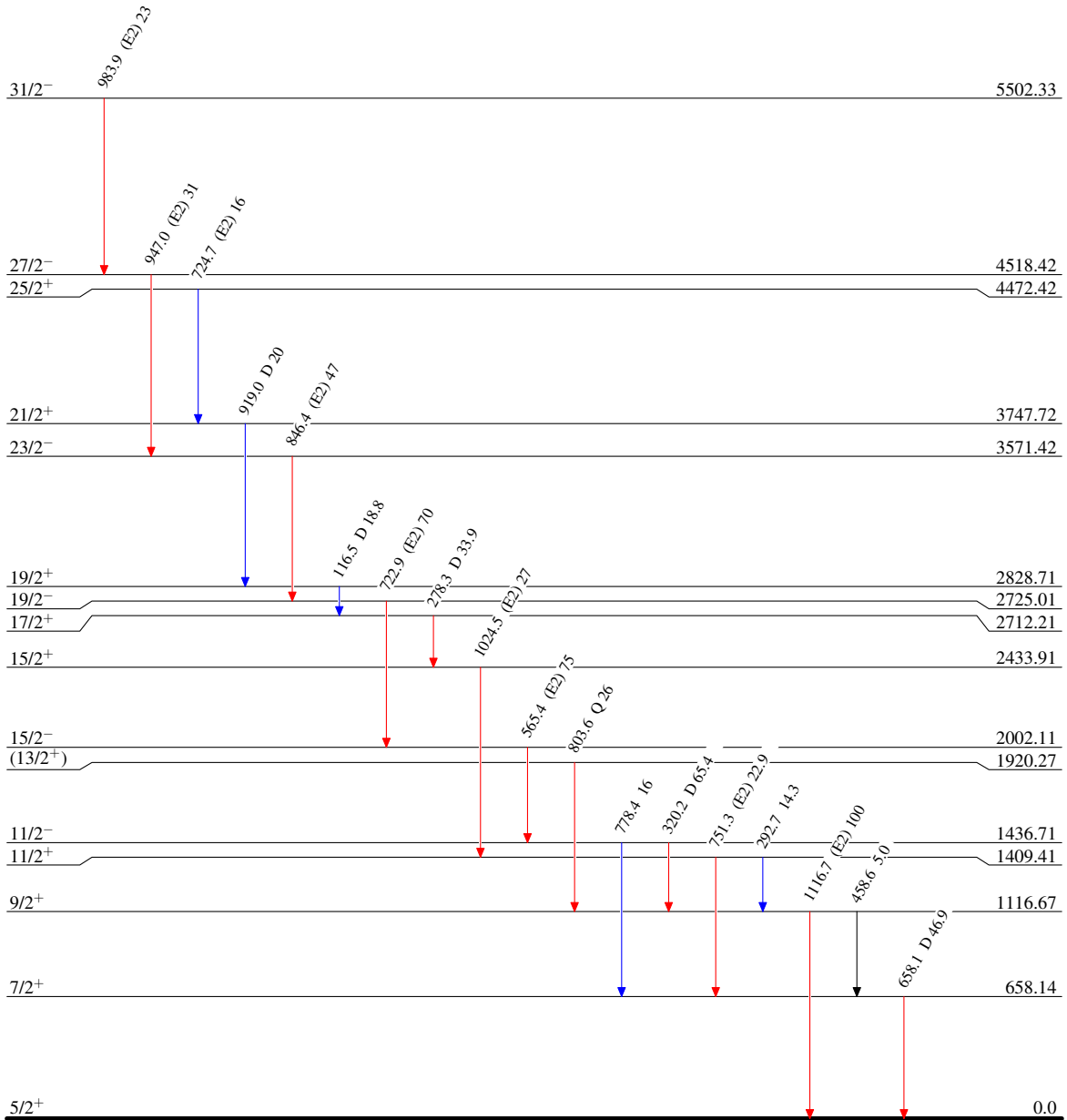
‡ ADOPTED by evaluator based on angular distribution coefficients or DCO ratios measured by **2001Bu01** considering $\Delta J=2$, Q As $\Delta J=2$, (E2); all the other reported mult's are of the $\Delta J=1$, D type and are adopted As such.

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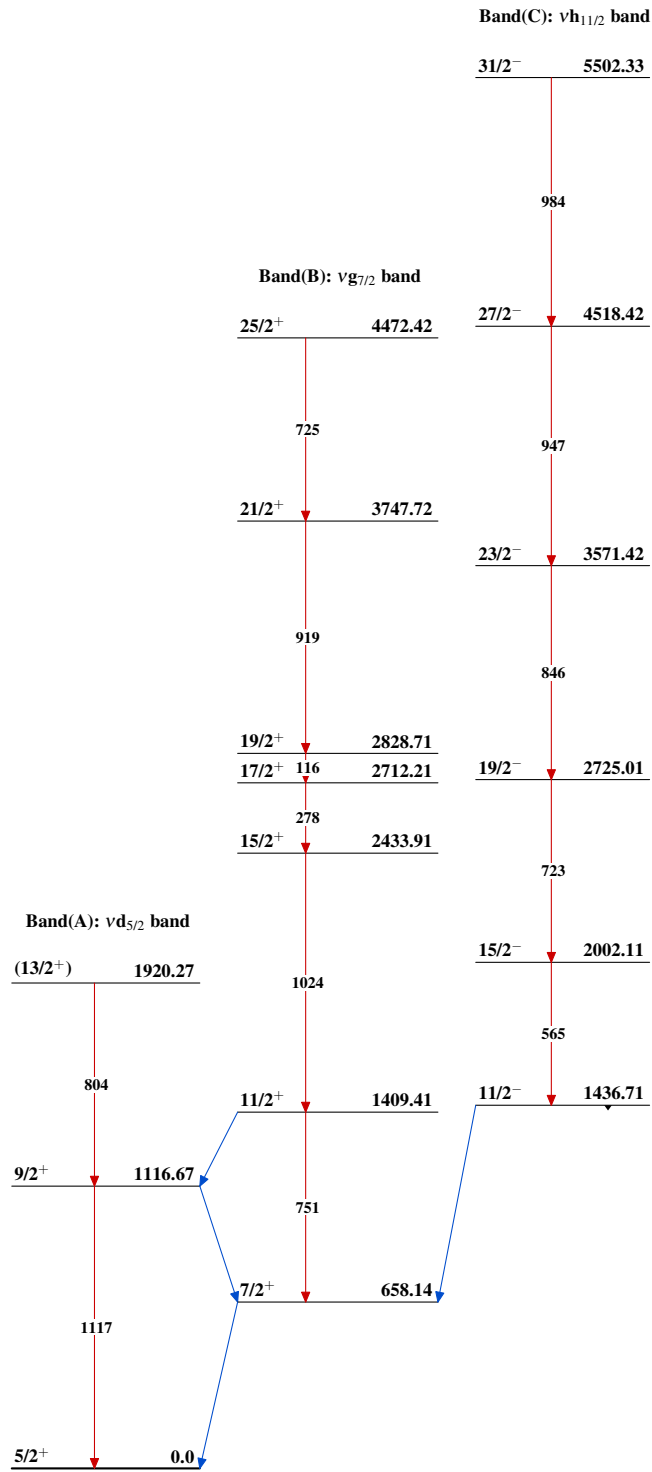
Level Scheme
Intensities: Relative I_γ

Legend

- $I_\gamma < 2\% \times I_\gamma^{max}$
- $I_\gamma < 10\% \times I_\gamma^{max}$
- $I_\gamma > 10\% \times I_\gamma^{max}$



$^{97}_{42}\text{Mo}_{55}$

$^{82}\text{Se}^{(19}\text{F,p3n}\gamma)$ 2001Bu01 $^{97}_{42}\text{Mo}_{55}$