

$^{50}\text{Cr}(^{58}\text{Ni},\text{pn}2\alpha\gamma)$ 1995Sc50,1998Ce03

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	Jun Chen, Balraj Singh		NDS 164, 1 (2020)	15-Feb-2020

1995Sc50: E=250 MeV ^{58}Ni beam was produced from the tandem cyclotron accelerator combination of VICKSI at the Hahn-Meitner-Institut. Target was 97.7% enriched ^{50}Cr of 2 mg/cm² thick rolled onto a 25 mg/cm² Au backing. Charged particles were detected with an array of 4 silicon surface-barrier detectors, neutrons were detected with a neutron multiplicity filter consisting of 7 segments of the HMI 2π detector filled with liquid scintillator, and γ rays were detected with the OSIRIS array of 12 HPGe detectors with BGO shields. Measured E_γ , I_γ , $\gamma\gamma$ -coin, $n\gamma\gamma$ -coin, (particle) $\gamma\gamma$ -coin. Deduced levels, J, π . Comparisons with shell-model calculations.

1998Ce03: E=261 MeV ^{58}Ni beam was produced from accelerator facility at Niels Bohr Institute. Target was ^{50}Cr . Charged particles were detected with a set of silicon detector, neutrons were detected with a neutron multiplicity filter, and γ rays were detected with the NORDBALL Ge-detector array. Measured E_γ , I_γ , $\gamma(\text{DCO})$, $\gamma\gamma$ -coin, $n\gamma\gamma$ -coin, (particle) $\gamma\gamma$ -coin. Deduced levels, J, π . Comparisons with shell-model calculations.

Others: [2001Li12](#), [1997Ra22](#), [1996He25](#).

 ^{98}Ag Levels

E(level) [†]	J π [‡]	Comments
0.0	(6 ⁺)	
220.0 3	(7 ⁺)	
1115.4 6	(8 ⁺)	
1404.7 5	(9 ⁺)	
1863.1 6	(10 ⁺)	
2152.5 6	(11 ⁺)	
2562.5 7	(12 ⁺)	
2715.7 7	(13 ⁺)	Possible maximum aligned state of configuration= $\pi g_{9/2}^{-3} \otimes \nu d_{5/2}$ (1998Ce03).
3716.7 11	(13 ⁺)	
4090.7 11	(14 ⁺)	
4475.7 15	(15)	

[†] From a least-squares fit to γ -ray energies, assuming $\Delta E_\gamma=1$ keV if not given for fitting purpose only.

[‡] From [1998Ce03](#), proposed based on γ -ray multiplicities and shell-model predictions.

 $\gamma(^{98}\text{Ag})$

DCO(D) ratios are from erratum to [1998Ce03](#), gated on stretched dipoles. Typical value is around 0.8 for stretched dipoles ($\Delta J=1$) and around 1.6 for stretched quadrupoles ($\Delta J=2$) and non-stretched dipoles ([1998Ce03](#)).

E_γ [†]	I_γ [‡]	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. [@]	Comments
153.2 3	76 5	2715.7	(13 ⁺)	2562.5	(12 ⁺)	D	DCO(D)=0.9 1 I_γ : other: 51 13 (1995Sc50).
220.0 3	88 6	220.0	(7 ⁺)	0.0	(6 ⁺)	D	DCO(D)=1.0 1 I_γ : other: 90 22 (1995Sc50).
289.4 & 3	19 & 6	1404.7	(9 ⁺)	1115.4	(8 ⁺)	(D)	DCO(D)=0.7 1 DCO is for 289.4 doublet. Placements and intensity division from 1998Ce03 . I_γ : other: 100 30 for doublet (1995Sc50). Additional information 1 .
289.4 & 3 374 [#]	56 & 5 37 3	2152.5 4090.7	(11 ⁺) (14 ⁺)	1863.1 3716.7	(10 ⁺) (13 ⁺)	(D) D	DCO(D)=0.8 2

Continued on next page (footnotes at end of table)

$^{50}\text{Cr}(^{58}\text{Ni},\text{pn}2\alpha\gamma)$ 1995Sc50,1998Ce03 (continued) $\gamma(^{98}\text{Ag})$ (continued)

E_γ [†]	I_γ [‡]	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. [@]	Comments
385 [#]	37 3	4475.7	(15)	4090.7	(14 ⁺)	D	DCO(D)=0.6 2
410.0 3	95 6	2562.5	(12 ⁺)	2152.5	(11 ⁺)	D	DCO(D)=0.6 1 I _γ : other: 55 16 (1995Sc50).
458.4 3	46 4	1863.1	(10 ⁺)	1404.7	(9 ⁺)	D	DCO(D)=1.1 2 I _γ : other: 53 15 (1995Sc50).
747.7 4	54 5	2152.5	(11 ⁺)	1404.7	(9 ⁺)	Q	DCO(D)=1.9 3 I _γ : other: 35 12 (1995Sc50).
896 [#]	26 3	1115.4	(8 ⁺)	220.0	(7 ⁺)	D	DCO(D)=0.8 2
1001 [#]	40 4	3716.7	(13 ⁺)	2715.7	(13 ⁺)	D	DCO(D)=1.0 4
1184.6 4	100	1404.7	(9 ⁺)	220.0	(7 ⁺)	Q	DCO(D)=1.6 2 I _γ : other: 102 29 (1995Sc50).
1375 [#]	16.8 25	4090.7	(14 ⁺)	2715.7	(13 ⁺)		

[†] From 1995Sc50, unless otherwise stated.

[‡] From 1998Ce03, normalized to $I_\gamma(1184.6\gamma)=100$. Quoted values are the original values of 1998Ce03 divided by 10. Note that values from 1995Sc50 given under comments are normalized to $I_\gamma(289.4\gamma)=100$ 30.

[#] Reported by 1998Ce03 only.

[@] From measured $\gamma(\text{DCO})$ in 1998Ce03.

[&] Multiply placed with intensity suitably divided.

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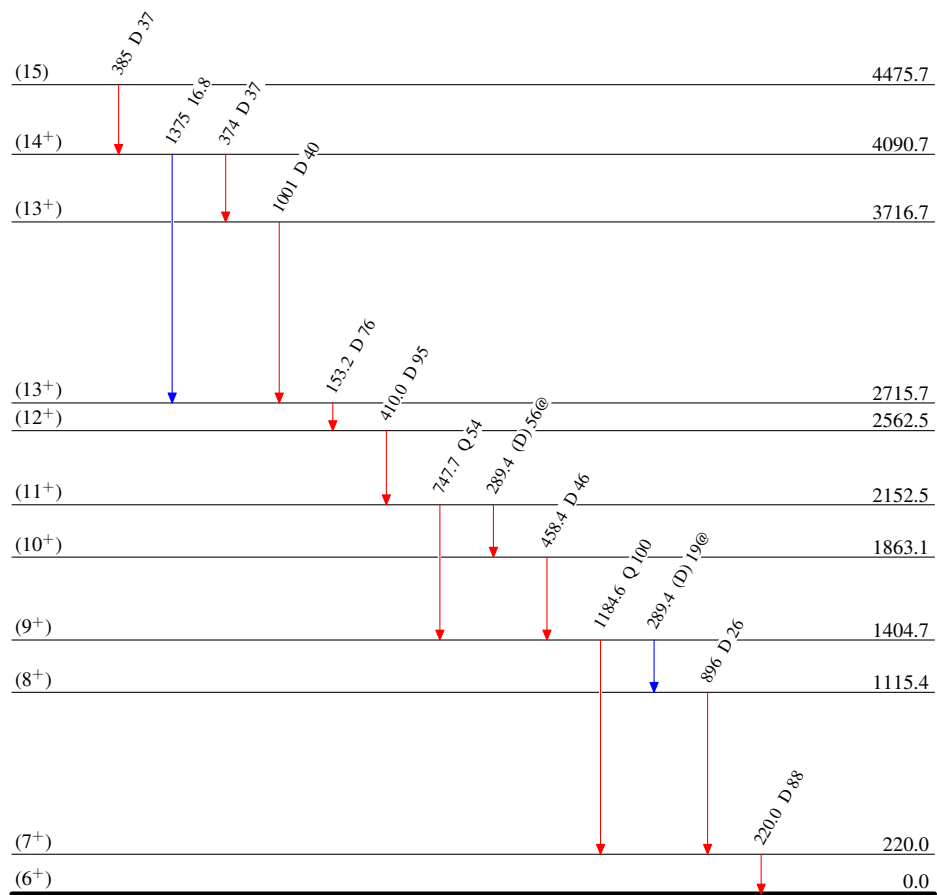
Level Scheme

Intensities: Relative I_γ

@ Multiply placed: intensity suitably divided

Legend

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

 ${}^{98}_{47}\text{Ag}_{51}$