

$^{54}\text{Fe}(\alpha, \text{n}), (\alpha, \text{n}\gamma), (\alpha, 2\text{n}\gamma)$ 1985BI16, 1975Sc15, 1975Bo14

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	Huo Junde, Huo Su, Yang Dong		NDS 112, 1513 (2011)	29-Oct-2009

Others: 1973Sc28, 1972Sc30.

1985BI16: $^{54}\text{Fe}(\alpha, 2\text{n}\gamma)$ E=35 MeV; measured $\gamma\gamma$ -coin. Yrast-band, shell model.

1975Sc15: $^{54}\text{Fe}(\alpha, \text{n})$ E=12.5 MeV; measured $E\gamma$ and $\sigma(\theta)$ with tof method.

1975Bo14: $^{54}\text{Fe}(\alpha, \text{n})$ E=13.0 MeV; measured $E\gamma$, $\gamma(\theta)$ and $\sigma(\theta)$ with tof method; DWBA analysis.

1973Sc28: E=10 MeV; measured $\text{n}\gamma$ -coin and DSA with Ge(Li) and NE213.

1972Sc30: E=12.50 MeV; measured $E\gamma$ and $I\gamma$ with Ge(Li).

See also 1975AI05, 1974Ev02, 1972Ev02, 1972Wi06, 1967Mi02, and 1974Fu07.

 ^{56}Ni Levels

E(level) [†]	J ^π #	T _{1/2} [@]	L&	Comments
0.0	0 ⁺		0	
2700.6 [‡] 7	2 ⁺	53 fs +34-17	2	
3923.6 [‡] 13	4 ⁺	>0.7 ps		J ^π : J=4 from $\text{n}\gamma(\theta)$ (1975Sc15).
3956.6 13	0 ⁺		0	
5003.7 13	0 ⁺		0	
5315.7 [‡] 16	6 ⁺			
5352.5 8	2 ⁺		2	
5483.7 13				
5668 [‡]				
6.0×10 ³ 1			(0)	
6319.7 13			2	
6405.8 13				
6554.6 8				
6654.8 13	0 ⁺		0	
7060 50				
7120 50				
7442.8 13	2 ⁺		2	
7570 30			(3)	
7690 30	0 ⁺		0	
7903.7 10	0 ⁺		0	IAS of 0 ⁺ 1445 keV in ^{56}Co (1972Sc30).
7955.7 [‡] 19	(8 ⁺)			J ^π : shell model and yrast band (1985BI16).
8080 30	2 ⁺		2	
8520 30	2 ⁺		2	
8690 20	2 ⁺		2	
8860 50				
9000 50				
9330 30	2 ⁺		2	
9418.7 [‡] 22	(10 ⁺)			J ^π : shell model and yrast band (1985BI16).
9450 30	2 ⁺		2	
9720 20			(2)	
9750 20	0 ⁺		0	
9940 20	0 ⁺		0	
10020 20			(0)	
10250 30	0 ⁺		0	
10650 30				
10820 20	2 ⁺		2	
10950 30				
11.3×10 ³ 10				
11.5×10 ³ 10				

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$^{54}\text{Fe}({}^3\text{He,n}),({}^3\text{He,n}\gamma),(\alpha,2n\gamma)$ 1985B116,1975Sc15,1975Bo14 (continued) ^{56}Ni Levels (continued)

<u>E(level)[†]</u>	<u>J^π#</u>	<u>L&</u>
11800 30	2 ⁺	2
12300 50		

[†] The states connected by gammas are from 1975Sc15, the others from 1975Bo14, except as noted.

[‡] From 1985B116.

From Adopted Levels.

@ From DSA (1973Sc28).

& From $\sigma(\theta)$ fits with DWBA (1975Bo14).

 $\gamma(^{56}\text{Ni})$

$\gamma\gamma$ -coin from 1985B116.

<u>E_γ#</u>	<u>I_γ[‡]</u>	<u>E_i(level)</u>	<u>J_i^π</u>	<u>E_f</u>	<u>J_f^π</u>	<u>E_γ#</u>	<u>I_γ[‡]</u>	<u>E_i(level)</u>	<u>J_i^π</u>	<u>E_f</u>	<u>J_f^π</u>
1223 [†]		3923.6	4 ⁺	2700.6	2 ⁺	2783		5483.7		2700.6	2 ⁺
1256		3956.6	0 ⁺	2700.6	2 ⁺	3619		6319.7		2700.6	2 ⁺
1392 [†]		5315.7	6 ⁺	3923.6	4 ⁺	3705		6405.8		2700.6	2 ⁺
1463 [†]		9418.7	(10 ⁺)	7955.7	(8 ⁺)	3854		6554.6		2700.6	2 ⁺
1744 ^{†@}		5668?		3923.6	4 ⁺	3954		6654.8	0 ⁺	2700.6	2 ⁺
2303		5003.7	0 ⁺	2700.6	2 ⁺	4742		7442.8	2 ⁺	2700.6	2 ⁺
2551	10 5	7903.7	0 ⁺	5352.5	2 ⁺	5203	90 5	7903.7	0 ⁺	2700.6	2 ⁺
2640 [†]		7955.7	(8 ⁺)	5315.7	6 ⁺	5352	90 5	5352.5	2 ⁺	0.0	0 ⁺
2652	10 5	5352.5	2 ⁺	2700.6	2 ⁺	6554		6554.6		0.0	0 ⁺
2701 [†]		2700.6	2 ⁺	0.0	0 ⁺						

[†] From 1985B116.

[‡] % photon branching from each level (1972Sc30), except as noted.

From 1975Sc15.

@ Placement of transition in the level scheme is uncertain.

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Level Scheme

Intensities: Type not specified

Legend

- $I_\gamma < 2\% \times I_\gamma^{\text{max}}$
- $I_\gamma < 10\% \times I_\gamma^{\text{max}}$
- $I_\gamma > 10\% \times I_\gamma^{\text{max}}$
- - - - - → γ Decay (Uncertain)
- Coincidence

