

⁵⁴Fe(⁵⁸Ni,p2n γ) 1999Yu02

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	S. Kumar(a), J. Chen(b) and F. G. Kondev		NDS 137, 1 (2016)	31-May-2016

1999Yu02: E(⁵⁸Ni)=220 MeV, ATLAS superconducting Linear accelerator, Argonne National Laboratory,USA. Target: 500 $\mu\text{g}/\text{cm}^2$, self-supporting foil. Detectors: GAMMASPHERE array (consisting of 101 Compton-suppressed Ge detectors), fragment mass separator (FMA), position-sensitive parallel- grid avalanche counter, double-sided silicon detector (DSSD). Recoil-decay tagging method. Measured: E γ , I γ , $\gamma\gamma$, p- $\gamma\gamma$.

Other: **1995Pa01**, but their level scheme is different compared to **1999Yu02** and the adopted one.

¹⁰⁹I Levels

E(level) [†]	J π [‡]	T _{1/2}	Comments
0.0	(1/2 ⁺ ,3/2 ⁺)	92.8 μs 8	J π ,T _{1/2} : from Adopted Levels.
x? 729+x?			
1372.4+x? [#]	(11/2 ⁻)		The lower intensity of the depopulating 643.4 γ , compared to the 593.4 γ that feeds this level indicates that this level may be isomeric.
1965.8+x? [#]	(15/2 ⁻)		
2503.1+x?			
2682.8+x? [#]	(19/2 ⁻)		
3240.1+x?			
3563.8+x? [#]	(23/2 ⁻)		
3788.1+x?			
3906.2+x?			
4620.8+x? [#]	(27/2 ⁻)		

[†] From a least-squares fit to E γ .

[‡] From **1999Yu02**.

[#] Band(A): π h11/2 band (**1999Yu02**). The assignment is tentative.

γ (¹⁰⁹I)

E γ [†]	I γ [†]	E _i (level)	J π _i	E _f	J π _f
^x 495.8 5	17 3				
537.3 5	36 4	2503.1+x?		1965.8+x?	(15/2 ⁻)
548.0 5	30 4	3788.1+x?		3240.1+x?	
593.4 5	100 7	1965.8+x?	(15/2 ⁻)	1372.4+x?	(11/2 ⁻)
643.4 [‡] 5	48 5	1372.4+x?	(11/2 ⁻)	729+x?	
666.1 5	30 4	3906.2+x?		3240.1+x?	
717 1	63 6	2682.8+x?	(19/2 ⁻)	1965.8+x?	(15/2 ⁻)
729 [‡] 1	35 4	729+x?		x?	
737 1	40 5	3240.1+x?		2503.1+x?	
^x 820 1	15 3				
^x 836 1	28 6				
881 1	44 8	3563.8+x?	(23/2 ⁻)	2682.8+x?	(19/2 ⁻)
^x 920 1	20 5				
1057 1	39 7	4620.8+x?	(27/2 ⁻)	3563.8+x?	(23/2 ⁻)

[†] From **1999Yu02**.

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

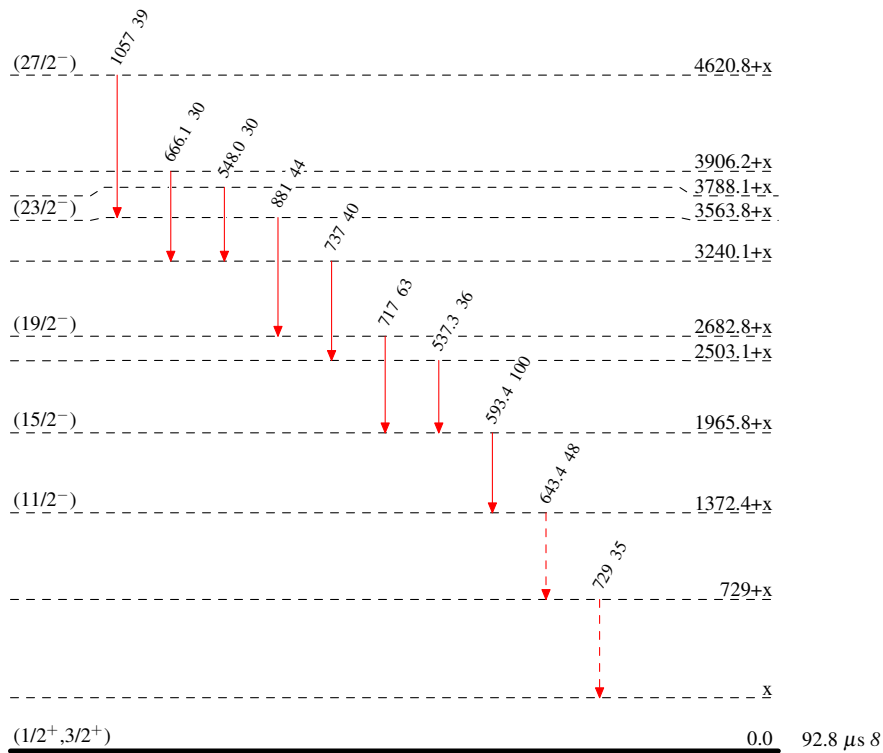
^x γ ray not placed in level scheme.

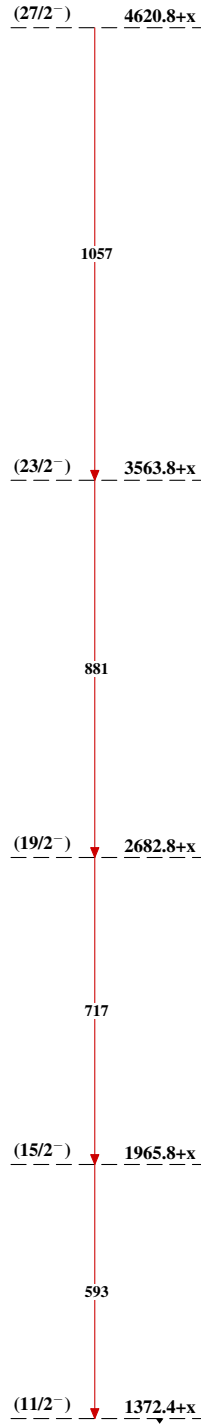
$^{54}\text{Fe}(^{58}\text{Ni},\text{p}2\text{n}\gamma)$ 1999Yu02

Legend

Level Scheme
 Intensities: Relative I_γ

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

 $^{109}_{53}\text{I}_{56}$ 92.8 μs 8

$^{54}\text{Fe} (^{58}\text{Ni}, p2n\gamma)$ 1999Yu02Band(A): $\pi h_{11/2}$ band
(1999Yu02) $^{109}_{53}\text{I}_{56}$