

^{58}Ni α decay [2009Jo03,2001Ru03](#)

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	Yang Dong, Huo Junde		NDS 121, 1 (2014)	20-Jun-2014

Parent: ^{58}Ni : $E=16795$; $J^\pi=15^-$; $Q(\alpha)=6399.2$ 4; $\% \alpha$ decay=100.0

[2009Jo03](#): ^{58}Ni from $^{28}\text{Si}(^{36}\text{Ar}, \alpha 2p)$ $E=136, 143$, and 148 MeV, measured E_γ , I_γ , $\gamma\gamma$ -coin, (charged Particle) γ -coin, gammasphere, microball arrays. The 16797 keV 3 and 17582 keV 3 states of ^{58}Ni were observed to α decay by emission of a prompt discrete α particle, respectively, both α particles feed the 2949 keV $6+$ yrast state in the daughter nucleus ^{54}Fe .

[2001Ru03](#): ^{58}Ni was produced by $^{28}\text{Si}(^{36}\text{Ar}, \alpha 2p)$ $E=143$ MeV, measured E_γ , I_γ , $\gamma\gamma$ -coin, (charged Particle) γ -coin, gammasphere, microball arrays. The 16795 state of ^{58}Ni was observed to α decay by emission of a prompt discrete α particle that feeds the 2949 keV $6+$ spherical yrast state in the daughter nucleus ^{54}Fe .

All data are from [2009Jo03](#), except as noted.

Decay scheme is only listed for 16797 state α decay of ^{58}Ni .

 ^{54}Fe Levels

E(level)	J^π
0	0^+
1408	2^+
2538	4^+
2949	6^+

 α radiations

E_α	E(level)	$I\alpha^\dagger$	Comments
7447 3	2949	2.6 3	E_α : From difference in level energies in 2009Jo03 . $I\alpha$: The 16797 keV was found to decay via a 2.6% 3 discrete α branch into the 2949 state in the daughter nucleus ^{54}Fe (2009Jo03). Other: 3.9% 3 (2001Ru03).

† Absolute intensity per 100 decays.

 $\gamma(^{54}\text{Fe})$

I_γ normalization: From $I\alpha=2.6$ 3.

E_γ	$I_\gamma^{\dagger\ddagger}$	$E_i(\text{level})$	J_i^π	E_f	J_f^π
411	95 8	2949	6^+	2538	4^+
1130	99 9	2538	4^+	1408	2^+
1408	100 7	1408	2^+	0	0^+

† From [2001Ru03](#).

‡ For absolute intensity per 100 decays, multiply by 0.026 3.

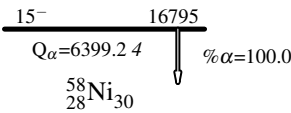
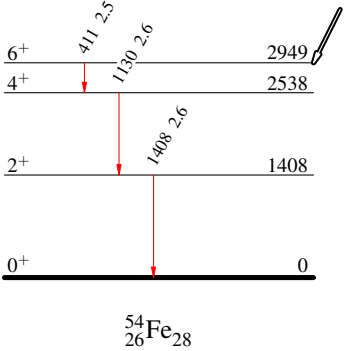
^{58}Ni α decay 2009Jo03,2001Ru03

Decay Scheme

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays

Legend

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



<u>Eα</u>	<u>Iα</u>
7447	2.6