Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Jun Chen	NDS 179, 1 (2022)	30-Nov-2021

Q(β^-)=−19740 *SY*; S(n)=18950 *SY*; S(p)=2.73×10^3 *10*; Q(α)=−7.01×10^3 *11* 2021Wa16
ΔQ(β^-)=510, ΔS(n)=510 (syst,2021Wa16).
S(2n)=35360 *310* (syst), S(2p)=3110 *90*, Q(ε)=11290 *90*, Q(εp)=9270 *90* (2021Wa16).
Mass measurement:
2020Fu05: measured mass excess=−18009 keV *92* at the HIRFL-CSR acceleration complex at Lanzhou, using the isochronous mass spectrometry (IMS) with the experimental cooler storage ring (CSRe).
Other measurements:
2016Or03: ^{48}Fe was produced in fragmentation of 74.5 MeV/nucleon ^{58}Ni beam on a 200 μm thick natural Ni target at LISE3-GANIL facility. Fragments were selected by LISE3 separator and implanted into a double-sided silicon strip detector (DSSSD), surrounded by four EXOGAM Ge clovers for γ ray detection. Implantations were identified by energy loss ΔE and time-of-flight (tof) information. Measured E_p, I_p, ^{48}Fe half-life, delayed proton decay branches.
1996Fa09: ^{9}Be(^{58}Ni,X) E=650 MeV/nucleon. Measured projectile-like fragments at 0°, fragment recoil separator; mag spect, ΔE/E counter telescope (Si), tof).
Others: 2016Bl05, 2002Pf03, 1994Bl10, 1993Bu04, 1987Po04.
Consult Nuclear Science References for theoretical studies.
Level scheme is tentatively proposed by 2021Ya33 based on comparisons with that of the mirror nucleus ^{48}Ti.

^{48}Fe Levels

Cross Reference (XREF) Flags

A ^{49}Ni εp decay
B ^{9}Be(^{49}Fe,Xγ)

E(level)†	J$^\pi$‡	$T_{1/2}$	XREF	Comments
0.0	0$^+$	45.5 ms *8*	AB	%ε+%β^+=100; %εp=15.3 *8* $T_{1/2}$: weighted average of 51 ms *3* (2016Or03), 45.3 ms *6* (2007Do17), 44 ms *7* (1996Fa09). %εp: weighted average of 14.4 *7* (2016Or03) and 15.9 *6* (2007Do17). Other: >3.6 *11* for E(p)=959 keV *33* (1996Fa09).
969.5 *5*	(2$^+$)		AB	
2253.5? *11*	(4$^+$)		B	
2377? *3*	(2$^+$)		B	
3197.5? *23*	(4$^+$)		B	
3241.5? *21*	(6$^+$)		B	
3475? *5*	(3$^-$)		B	
3497.5? *20*	(6$^+$)		B	
4205? *4*	(5$^-$)		B	

† From a least-squares fit to γ-ray energies.
‡ Proposed in 2021Ya33 in (^{49}Fe,Xγ) based on comparions with mirror nucleus ^{48}Ti and shell-model predictions.

Adopted Levels, Gammas (continued)

$\gamma(^{48}Fe)$

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Comments
969.5	(2^+)	969.5 *5*	100	0.0	0^+	E_γ: from 2007Do17. Other: 971 *1* from (^{49}Fe,Xγ) (2021Ya33).
2253.5?	(4^+)	1284 *1*	100	969.5	(2^+)	
2377?	(2^+)	1407 *3*	100	969.5	(2^+)	
3197.5?	(4^+)	944[‡] *2*	100	2253.5?	(4^+)	
3241.5?	(6^+)	988 *3*	100	2253.5?	(4^+)	
3475?	(3^-)	2505 *5*	100	969.5	(2^+)	
3497.5?	(6^+)	256 *1*	100 *16*	3241.5?	(6^+)	
		1244 *2*	79 *16*	2253.5?	(4^+)	
4205?	(5^-)	1951[‡] *4*	100	2253.5?	(4^+)	

[†] From ^{49}Fe,Xγ) (2021Ya33), unless otherwise noted.
[‡] Placement of transition in the level scheme is uncertain.

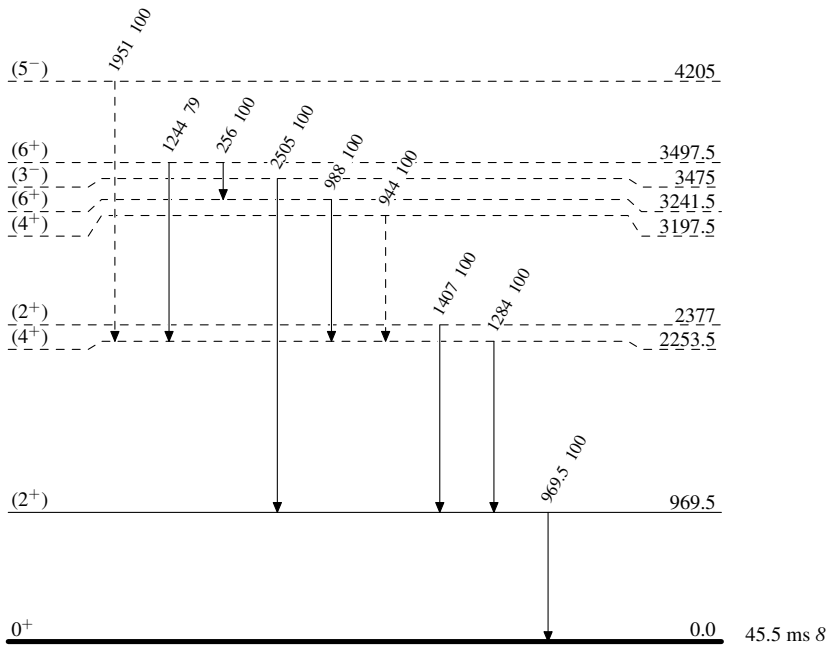
Adopted Levels, Gammas

Legend

Level Scheme

Intensities: Relative photon branching from each level

γ Decay (Uncertain)



$^{48}_{26}Fe_{22}$