^{56}Fe(^{7}Li,2npγ) 1980Ke06

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	E. Browne, J. K. Tuli	NDS 114, 1849 (2013)	31-Dec-2012

E(^{7}Li)=14-24 MeV. Measured nγ, γγ, γ(θ), linear polarizations, DSA, recoil distance. Ge(Li) and neutron scintillation detectors.

^{60}Ni Levels

E(level)	Jπ[@]	$T_{1/2}$[†]	Comments
0.0	0^+		
1332.51 *5*	2^+		
2158.91 *12*	2^+		
2505.90 *14*	4^+	≤4 ps	
2625.70 *13*	3^+	≤0.7 ps	Jπ: from γ(θ), linear polarization data of 466 keV γ, and $T_{1/2}$.
3119.75 *16*	4^+	0.24 ps *10*	
3124.1 *4*	2^+		
3185.72 *22*		1.6 ps *7*	
3267.0 *10*	2^+		
3618.6 *10*			
3671.4 *8*	4^+		Jπ: (4^+) from yield function for the 1165 keV γ.
3732.4? *10*			
4165.63 *25*	5^+	0.8[#] ps *4*	Jπ: from γ(θ) and linear polarization data of the decay γ.
4265.29 *17*	6^+	0.5 ps *3*	Jπ: from γ(θ) and linear polarization data of the 1759 keV γ, and $T_{1/2}$ of the state.
4368.1? *4*			
4610.4? *4*			
4986.1 *3*	(6^+)		Jπ: 6^+, 8^+ from γ(θ) and linear polarization data of the decay γ; γ yield function suggests J≤6.
5348.99 *22*	7^-	250[‡] ps *21*	Jπ: from γ(θ), linear polarization data of the 1084 keV γ, and $T_{1/2}$ of the state.
5663.7 *10*	5,7		Jπ: γ(θ) and linear polarization data of the decay γ is D+Q. J=7 favored from high excitation energy and absence of decays to low spin states. Positive parity favored from large δ.
5785.1? *4*	(7^+)		Jπ: 5^+, 7^+ from γ(θ) and linear polarization data of the decay γ.
6810.5 *3*	9^-	0.6 ps *3*	Jπ: from excitation function, the absence of decays to low spin states, and population systematics in HI induced reactions.

† From DSA measurements, except as noted.
‡ From recoil distance measurement.
# Effects of the impurity neglected.
@ From Adopted Levels data set.

^{56}Fe(^{7}Li,2npγ) 1980Ke06 (continued)

$\gamma(^{60}Ni)$

E_γ	I_γ[‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	δ[#]	α[†]	Comments
202.45[&] *20*	4.4 *9*	4368.1?		4165.63	5^+				
242.3[&] *2*	1.7 *2*	4610.4?		4368.1?					
362.5 *10*	0.7 *3*	5348.99	7^-	4986.1	(6^+)				
466.5 *2*	<16	2625.70	3^+	2158.91	2^+	D+Q	+0.02 *+11−27*		
494.15 *15*	1.02 *12*	3119.75	4^+	2625.70	3^+				
641.3 *10*	0.62 *12*	3267.0	2^+	2625.70	3^+				
680 *1*	≈2.6	3185.72		2505.90	4^+				
720.8 *2*	2.1 *2*	4986.1	(6^+)	4265.29	6^+				Mult.,δ: D+Q, −0.27 *+18−7* if $J^\pi(4986)=6^+$; Q+O, −0.03 *+17−9* if $J^\pi(4986)=8^+$.
799.0[&] *2*	3.4 *3*	5785.1?	(7^+)	4986.1	(6^+)	D+Q	−0.07 *+9−27*		E_γ: differently placed by 1984Ts02 from $\gamma\gamma$ data, see ^{58}Ni(α,2pγ).
826.07 *15*	12.5 *6*	2158.91	2^+	1332.51	2^+	D+Q	+0.03 *+1−25*		
992.9 *10*	2.2 *2*	3618.6		2625.70	3^+				
1026.75 *20*	1.0 *2*	3185.72		2158.91	2^+				
1083.70 *15*	10.3 *5*	5348.99	7^-	4265.29	6^+	D+Q	+0.03 *+1−25*		
1106.7[&] *10*	8.7 *3*	3732.4?		2625.70	3^+				
1145.67 *15*	1.21 *18*	4265.29	6^+	3119.75	4^+				
1165.5 *7*	6.7 *3*	3671.4	4^+	2505.90	4^+				
1173.24 *15*	63 *3*	2505.90	4^+	1332.51	2^+	E2+M3[@]	+0.02 *+18−2*	0.000172 *17*	α=0.000172 *17*; α(K)=0.000150 *15*; α(L)=1.47×10^{-5} *15*; α(M)=2.07×10^{-6} *21*; α(N+..)=5.51×10^{-6} *2* α(N)=8.9×10^{-8} *9*; α(IPF)=5.42×10^{-6} *22*
1293.44 *15*	4.2 *3*	2625.70	3^+	1332.51	2^+				
1332.48 *5*	100	1332.51	2^+	0.0	0^+	Q			
1398.4 *9*	1.5 *2*	5663.7	5,7	4265.29	6^+	D+Q	−2.3 *6*		
1461.5 *2*	4.4 *3*	6810.5	9^-	5348.99	7^-	E2+M3[@]	−0.02 *+30−7*	0.000177 *12*	α=0.000177 *12*; α(K)=9.4×10^{-5} *15*; α(L)=9.1×10^{-6} *15*; α(M)=1.29×10^{-6} *21*; α(N+..)=7.3×10^{-5} *5* α(N)=5.6×10^{-8} *9*; α(IPF)=7.3×10^{-5} *5*
1659.7 *2*	2.6 *5*	4165.63	5^+	2505.90	4^+	D+Q	−1.7 *4*		Contamination effect observed in the yield function. Additional information 1.
1759.21 *15*	22.4 *11*	4265.29	6^+	2505.90	4^+	E2+M3[@]	−0.08 *+3−7*	0.000270 *4*	α=0.000270 *4*; α(K)=6.57×10^{-5} *22*; α(L)=6.39×10^{-6} *21*; α(M)=9.0×10^{-7} *3*; α(N+..)=0.000197 *4* α(N)=3.89×10^{-8} *13*; α(IPF)=0.000197 *4*
1787.5 *4*	6.7 *10*	3119.75	4^+	1332.51	2^+				
1791.6 *4*	5.6 *8*	3124.1	2^+	1332.51	2^+				
1854.3 *10*		3185.72		1332.51	2^+				I_γ: Weak.
2159.1 *2*	1.62 *16*	2158.91	2^+	0.0	0^+	Q			

[†] Additional information 2.
[‡] From $\gamma(\theta)$ at E(^{7}Li)=24 MeV.

^{56}Fe(^{7}Li,2npγ) 1980Ke06 (continued)

γ(^{60}Ni) (continued)

From $\gamma(\theta)$ and linear polarization data, except as noted.

@ Q+O from $\gamma(\theta)$, parity from RUL.

& Placement of transition in the level scheme is uncertain.

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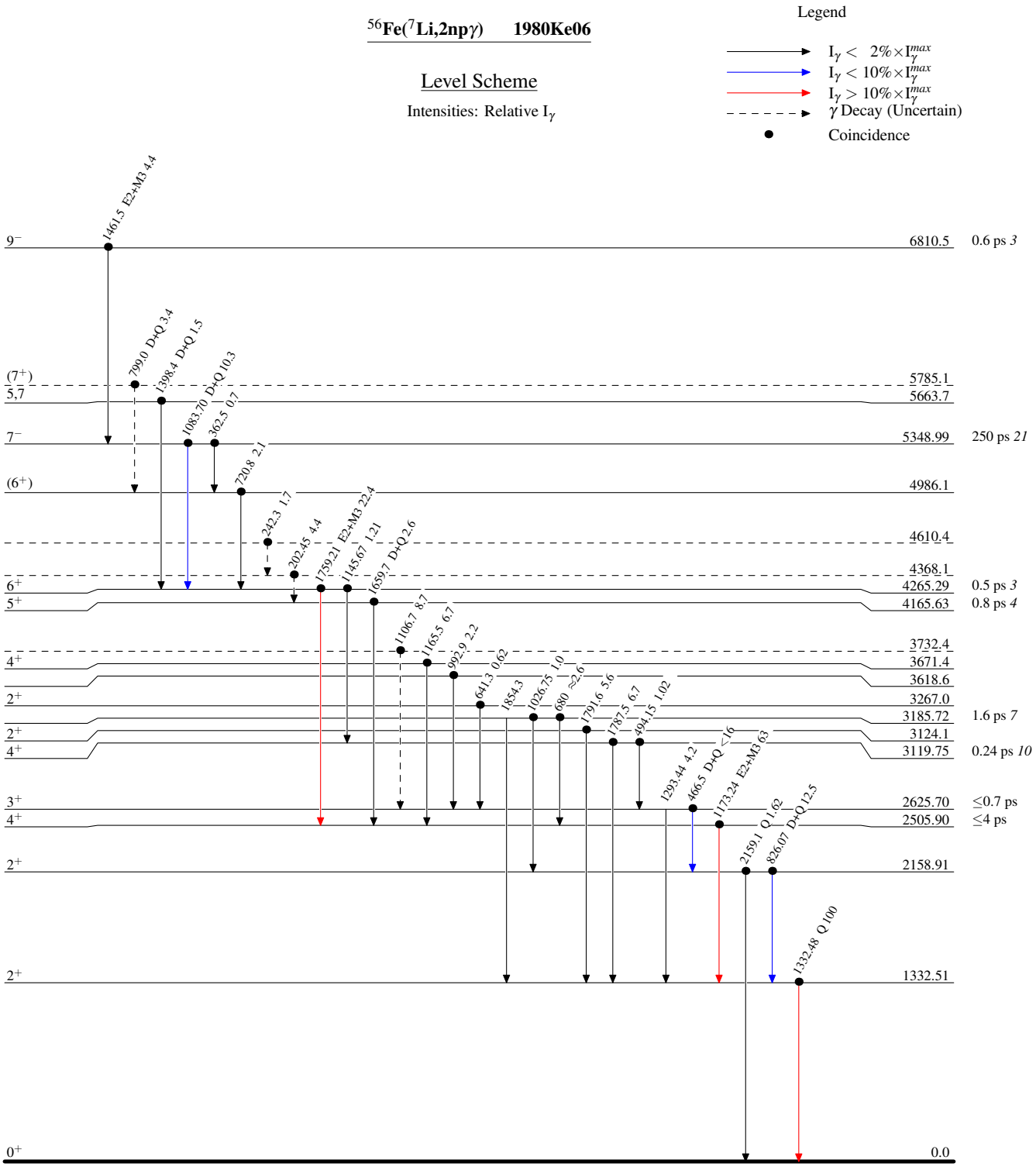
Level Scheme

Intensities: Relative I_γ



$^{60}_{28}Ni_{32}$