

**Adopted Levels, Gammas**

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	Alan L. Nichols, Balraj Singh, Jagdish K. Tuli		NDS 113,973 (2012)	15-Apr-2012

Q( $\beta^-$ )=2546 19; S(n)=8029 4; S(p)=14425 4; Q( $\alpha$ )=-9.47×10<sup>3</sup> 21 [2012Wa38](#)  
 Note: Current evaluation has used the following Q record 2553 20 8028.9 38 14424.936-9.47E3 20 [2011AuZZ](#).  
 S(2n)=13607.8 44, S(2p)=26952 213 ([2011AuZZ](#)).  
 Values in [2003Au03](#): Q( $\beta^-$ )=2531 25, S(n)=8051 25, S(p)=14630 230, S(2n)=13632 15, S(2p)=26970 210.  
[1975Fr16](#): identification and production of <sup>62</sup>Fe in <sup>64</sup>Ni(n,2pn) reaction at E(n)=25-200 MeV, neutron beam of the 200-MeV LINAC at BNL. Identification from monitoring of decay of <sup>62</sup>Fe and growth of <sup>62</sup>Co. Measured E $\gamma$ , half-life.  
 Delayed neutron decay of <sup>63</sup>Mn is allowed and, in principle, can populate levels in <sup>62</sup>Fe, but there is no experimental information available for this decay mode.  
 Nuclear structure calculations:  
[2009Sr01](#): shell model calculations for yrast band up to 8<sup>+</sup>.  
[2010Le20](#): levels, B(E2), Q, intruder levels, shell model.  
[2009Su20](#): shell model calculations for yrast band and 2-quasiparticle negative-parity bands.  
[2002Ca48](#): shell-model calculations for level energy and B(E2) of first 2<sup>+</sup> state.

<sup>62</sup>Fe Levels

Cross Reference (XREF) Flags

<b>A</b>	<sup>62</sup> Mn $\beta^-$ decay (671 ms)	<b>E</b>	<sup>197</sup> Au( <sup>62</sup> Fe, <sup>62</sup> Fe' $\gamma$ )
<b>B</b>	<sup>62</sup> Mn $\beta^-$ decay (92 ms)	<b>F</b>	<sup>208</sup> Pb( <sup>64</sup> Ni, X $\gamma$ )
<b>C</b>	<sup>9</sup> Be( <sup>62</sup> Fe, <sup>62</sup> Fe' $\gamma$ )	<b>G</b>	<sup>238</sup> U( <sup>64</sup> Ni, X $\gamma$ ), <sup>64</sup> Ni( <sup>238</sup> U, X $\gamma$ )
<b>D</b>	<sup>64</sup> Ni( <sup>18</sup> O, <sup>20</sup> Ne), ( <sup>14</sup> C, <sup>16</sup> O),		

E(level) <sup>†</sup>	J $\pi^{\ddagger}$	T <sub>1/2</sub>	XREF	Comments
0.0 <sup>#</sup>	0 <sup>+</sup>	68 s 2	<b>ABCDEFGF</b>	% $\beta^-$ =100 T <sub>1/2</sub> : from 506.1-keV gamma decay curve ( <a href="#">1975Fr16</a> ).
877.31 <sup>#</sup> 10	2 <sup>+</sup>	5.3 ps 6	<b>ABCDEFGF</b>	J $\pi$ : $\Delta J=2$ , E2 $\gamma$ to 0 <sup>+</sup> . T <sub>1/2</sub> : average of 5.1 ps 6 ( <a href="#">2010Lj01</a> , RDDS and differential decay-curve analysis in <sup>64</sup> Ni( <sup>238</sup> U, X $\gamma$ )) and 5.5 ps 7 ( <a href="#">2011Ro02</a> , RDDS and line-shape analysis in <sup>197</sup> Au( <sup>62</sup> Fe, <sup>62</sup> Fe' $\gamma$ )).
1692.3 20	(0 <sup>+</sup> )		<b>B</b>	J $\pi$ : from systematics of level structure of even-even Fe nuclei.
2016.98 18	(2 <sup>+</sup> )		<b>A D</b>	J $\pi$ : $\gamma$ to 0 <sup>+</sup> ; $\gamma$ from (3 <sup>+</sup> ).
2176.47 <sup>#</sup> 14	(4 <sup>+</sup> )		<b>A FG</b>	J $\pi$ : $\Delta J=2$ , Q $\gamma$ to 2 <sup>+</sup> ; band member.
2691.62 16	(3 <sup>+</sup> )		<b>A G</b>	J $\pi$ : $\Delta J=1$ , dipole $\gamma$ to 2 <sup>+</sup> ; $\gamma$ to (4 <sup>+</sup> ).
2849.72 24			<b>A</b>	
3008.9 <sup>@</sup> 5	(4 <sup>-</sup> )		<b>A FG</b>	
3015.7 <sup>&amp;</sup> 5	(5 <sup>-</sup> )		<b>A FG</b>	
3310.0 <sup>@</sup> 7	(6 <sup>-</sup> )		<b>A G</b>	
3360.3 15			<b>A</b>	
3387.84 <sup>#</sup> 17	(6 <sup>+</sup> )		<b>FG</b>	J $\pi$ : $\Delta J=(2)$ , (Q) $\gamma$ to (4 <sup>+</sup> ); band member.
3604.87 <sup>&amp;</sup> 19	(7 <sup>-</sup> )		<b>FG</b>	
3629.4 3			<b>FG</b>	
3633.48 18	(4 <sup>+</sup> )		<b>A</b>	J $\pi$ : $\Delta J=(1)$ , (dipole) $\gamma$ to (3 <sup>+</sup> ) from $\gamma\gamma(\theta)$ data.
3661.7 15			<b>A</b>	
3713.7 15			<b>A</b>	
4050.7 4	(2 <sup>+</sup> , 3, 4 <sup>+</sup> )		<b>A</b>	J $\pi$ : gammas to 2 <sup>+</sup> and (4 <sup>+</sup> ).
4251.77 <sup>#</sup> 20	(8 <sup>+</sup> )		<b>FG</b>	J $\pi$ : $\Delta J=(2)$ , (Q) $\gamma$ to (6 <sup>+</sup> ); band member.
4358.84 <sup>@</sup> 25	(8 <sup>-</sup> )		<b>G</b>	

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**Adopted Levels, Gammas (continued)**

$^{62}\text{Fe}$  Levels (continued)

E(level) <sup>†</sup>	J <sup>π</sup> <sup>‡</sup>	XREF	Comments
4902.2& 4	(9 <sup>-</sup> )	G	
4970 80		D	E(level): this level reported in ( $^{14}\text{C}, ^{16}\text{O}$ ) is probably different from the 4902 (9 <sup>-</sup> ) level from $^{238}\text{U}(^{64}\text{Ni}, X\gamma)$ .
5319.5# 3	(10 <sup>+</sup> )	FG	J <sup>π</sup> : $\gamma$ to (8 <sup>+</sup> ); band member.
5474?		G	

<sup>†</sup> From a least-squares fit to E $\gamma$  data.

<sup>‡</sup> Assignments for negative-parity states are based on systematics and shell-model calculations by 2009Su20.

# Band(A): Yrast band.

@ Band(B): Band based on (4<sup>-</sup>),  $\alpha=0$ .

& Band(b): Band based on (5<sup>-</sup>),  $\alpha=1$ .

E <sub>i</sub> (level)	J <sub>i</sub> <sup>π</sup>	E <sub>γ</sub> <sup>†</sup>	I <sub>γ</sub> <sup>†</sup>	γ( $^{62}\text{Fe}$ )		Mult. <sup>‡</sup>	Comments
				E <sub>f</sub>	J <sub>f</sub> <sup>π</sup>		
877.31	2 <sup>+</sup>	877.3 1	100	0.0	0 <sup>+</sup>	E2	B(E2)(W.u.)=14.1 16 Mult.: $\Delta J=2$ , quadrupole from $\gamma(\theta)$ and $\gamma\gamma(\theta)$ ; RUL.
1692.3	(0 <sup>+</sup> )	815 2		877.31	2 <sup>+</sup>		
2016.98	(2 <sup>+</sup> )	1139.8 2	100 9	877.31	2 <sup>+</sup>		
		2017.0 10	11 6	0.0	0 <sup>+</sup>		
2176.47	(4 <sup>+</sup> )	1299.2 1	100	877.31	2 <sup>+</sup>	Q	
2691.62	(3 <sup>+</sup> )	515.2 2	5.0 13	2176.47	(4 <sup>+</sup> )		
		674.8 2	16.9 25	2016.98	(2 <sup>+</sup> )		
		1814.0 2	100 8	877.31	2 <sup>+</sup>	D	
2849.72		673.3 2	100	2176.47	(4 <sup>+</sup> )		
3008.9	(4 <sup>-</sup> )	832.4 5	100	2176.47	(4 <sup>+</sup> )		
3015.7	(5 <sup>-</sup> )	839.3 5	100	2176.47	(4 <sup>+</sup> )		
3310.0	(6 <sup>-</sup> )	294.3 5	100 50	3015.7	(5 <sup>-</sup> )		
		301.0 10	<33	3008.9	(4 <sup>-</sup> )		
3360.3		1183.8 15	100	2176.47	(4 <sup>+</sup> )		
3387.84	(6 <sup>+</sup> )	1211.3 1	100	2176.47	(4 <sup>+</sup> )	(Q)	
3604.87	(7 <sup>-</sup> )	294.8 3	6.1 22	3310.0	(6 <sup>-</sup> )		
		589.2 1	100 5	3015.7	(5 <sup>-</sup> )	(Q)	
3629.4		241.6 2	100	3387.84	(6 <sup>+</sup> )		
3633.48	(4 <sup>+</sup> )	941.8 2	100 7	2691.62	(3 <sup>+</sup> )	(D)	
		1457.1 2	77 6	2176.47	(4 <sup>+</sup> )		
		1616.4 3	2.6 4	2016.98	(2 <sup>+</sup> )		
		2756.0 5	2.5 3	877.31	2 <sup>+</sup>		
3661.7		1485.2 15	100	2176.47	(4 <sup>+</sup> )		
3713.7		1537.2 15	100	2176.47	(4 <sup>+</sup> )		
4050.7	(2 <sup>+</sup> , 3, 4 <sup>+</sup> )	1201.1 3	100 21	2849.72			
		1874.0 15	13 13	2176.47	(4 <sup>+</sup> )		
		3172.3 9	26 13	877.31	2 <sup>+</sup>		
4251.77	(8 <sup>+</sup> )	647.1 3	6.7 34	3604.87	(7 <sup>-</sup> )		
		863.9 1	100 8	3387.84	(6 <sup>+</sup> )	(Q)	
4358.84	(8 <sup>-</sup> )	754.0 2	44 13	3604.87	(7 <sup>-</sup> )		
		1048.7 3	100 25	3310.0	(6 <sup>-</sup> )		
4902.2	(9 <sup>-</sup> )	1297.3 3	100	3604.87	(7 <sup>-</sup> )		
5319.5	(10 <sup>+</sup> )	1067.7 2	100	4251.77	(8 <sup>+</sup> )		
5474?		1222#		4251.77	(8 <sup>+</sup> )		

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**Adopted Levels, Gammas (continued)** **$\gamma({}^{62}\text{Fe})$  (continued)**

† From  ${}^{62}\text{Mn}$   $\beta^-$  decay and  ${}^{238}\text{U}({}^{64}\text{Ni}, X\gamma)$ .

‡ From  $\gamma\gamma(\theta)$  in  ${}^{62}\text{Mn}$   $\beta^-$  decay and  $\gamma(\theta)$  in  ${}^{238}\text{U}({}^{64}\text{Ni}, X\gamma)$ .

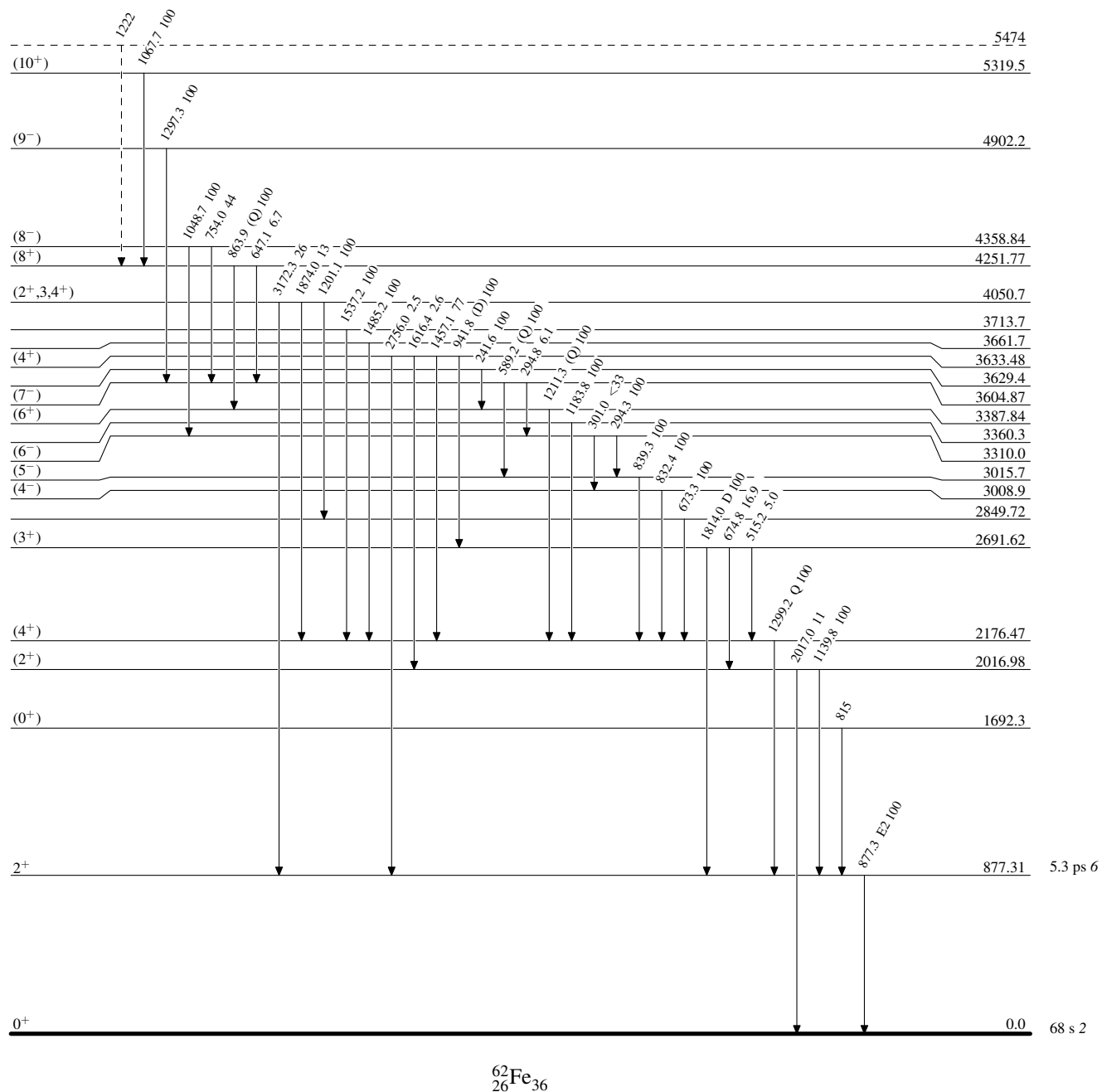
# Placement of transition in the level scheme is uncertain.

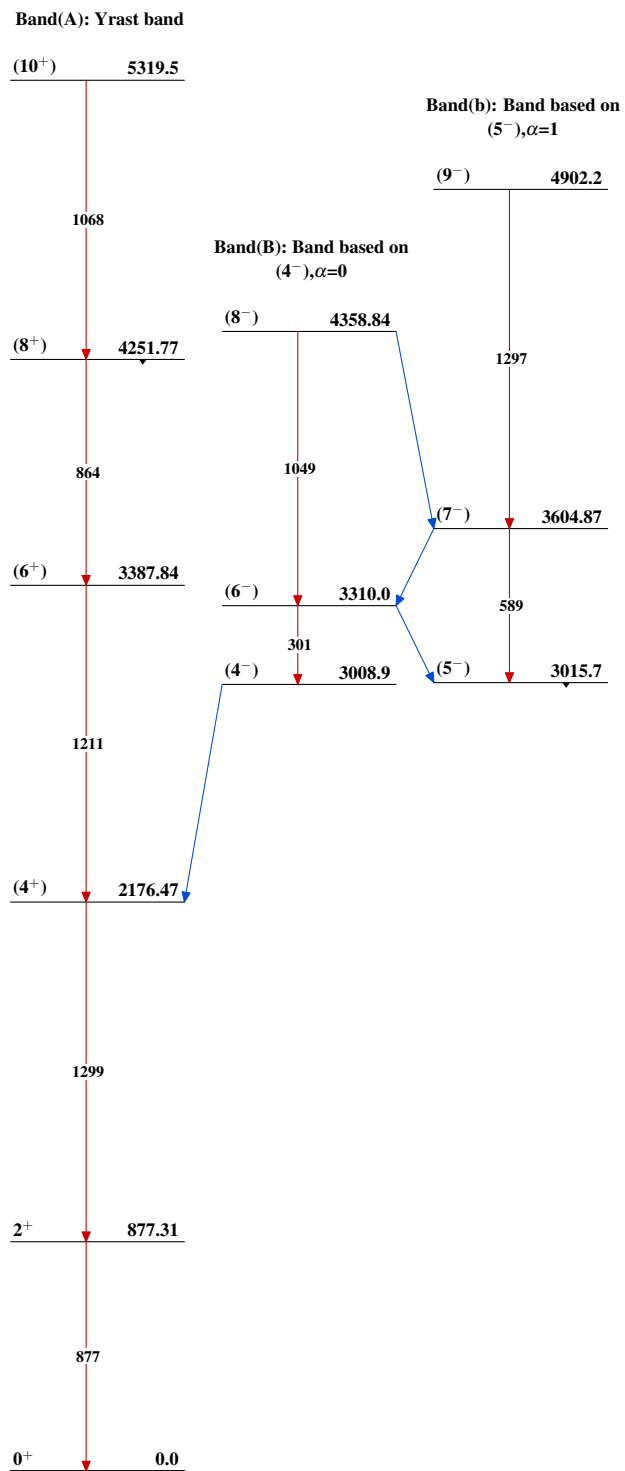
**Adopted Levels, Gammas**

Legend

**Level Scheme**

Intensities: Relative photon branching from each level

-----▶  $\gamma$  Decay (Uncertain) $^{62}_{26}\text{Fe}_{36}$

**Adopted Levels, Gammas** $^{62}_{26}\text{Fe}_{36}$