

**Adopted Levels, Gammas**

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Coral M. Baglin	NDS 113,2187 (2012)	15-Sep-2012

Q( $\beta^-$ )=3643 10; S(n)=6536 10; S(p)=8454 11; Q( $\alpha$ )=-4633 10 [2012Wa38](#)  
 Note: Current evaluation has used the following Q record 3643 9 6536 9 8454 11 -4634 9 [2011AuZZ](#).  
 Q( $\beta^-$ ),S(n),S(p),Q( $\alpha$ ): from [2011AuZZ](#); 3641 9, 6540 9, 8457 10, -4629 9, respectively, from [2003Au03](#).  
 For shell-model calculations for levels in <sup>92</sup>Y, see [1966Ve02](#) and [1973Wa36](#).  
[1974Su06](#) suggest principal configuration= $((\pi 2p_{1/2})^1(\nu 2d_{5/2})^3)$  for 310, 430, 780, 1030, 1310 levels, configuration= $((\pi 1g_{9/2})(\nu d_{5/2})^3)$  for 1490, 1890 levels and configuration= $((\pi 1g_{9/2})(\nu d_{3/2})^3)$  for 1690 level.

<sup>92</sup>Y Levels

Cross Reference (XREF) Flags

A	<sup>92</sup> Sr $\beta^-$ decay	D	<sup>238</sup> U( <sup>82</sup> Se,X $\gamma$ ), <sup>208</sup> Pb( <sup>90</sup> Zr,X $\gamma$ ),
B	<sup>94</sup> Zr(d, $\alpha$ )	E	<sup>92</sup> Zr( <sup>7</sup> Li, <sup>7</sup> Be)
C	<sup>92</sup> Y IT decay		

E(level) <sup>†</sup>	J $^\pi$	T <sub>1/2</sub>	XREF	Comments
0.0	2 <sup>-</sup>	3.54 h 1	ABC	% $\beta^-$ =100 $\mu$ =-0.67 2 ( <a href="#">2007Ch07</a> ); Q=0.00 2 ( <a href="#">2007Ch07</a> ) $\Delta\langle r^2 \rangle$ ( <sup>92</sup> Y, <sup>89</sup> Y)=+0.385 fm <sup>2</sup> ( <a href="#">2007Ch07</a> ). $\mu$ , Q: from LASER spectroscopy. $\mu$ : relative to $\mu$ ( <sup>89</sup> Y)=-0.1374154 3 ( <a href="#">1977Ha12</a> ). T <sub>1/2</sub> : from <a href="#">1966No08</a> . Others: 3.53 h 2 ( <a href="#">1960Fr05</a> ), 3.50 h 5 ( <a href="#">1962Bu16</a> ). J $^\pi$ : the $\beta^-$ spectrum in the log <i>f</i> <sup>1</sup> <i>t</i> =9.24 decay to the 0 <sup>+</sup> g.s. of <sup>92</sup> Zr has first-forbidden unique shape ( <a href="#">1962Bu16</a> ). J=2 confirmed in LASER spectroscopy ( <a href="#">2007Ch07</a> , <a href="#">2006Ca38</a> ). Configuration= $((\pi 2p_{1/2})^1((\nu 2d_{5/2})^3 5/2))$ (see, e.g., <a href="#">1974Su06</a> ). J $^\pi$ : possibly 6 <sup>+</sup> based on shell-model calculations ( <a href="#">2007Bu35</a> ). T <sub>1/2</sub> : from time correlations between implanted <sup>92</sup> Y nuclei and $\gamma$ -ray events in <sup>92</sup> Y IT decay ( <a href="#">2009Fo05</a> ).
0.0+x	J	4.2 $\mu$ s +8-6	CD	J $^\pi$ : D 185 $\gamma$ to spin J 0.0+x level.
185.0+x 2	(J+1)		D	J $^\pi$ : $\gamma$ from 1 <sup>+</sup> ; $\gamma$ to 2 <sup>-</sup> .
241.56 5	(0 <sup>-</sup> ,2,3 <sup>+</sup> )		A	J $^\pi$ : L(d, $\alpha$ )=3.
310 10	2 <sup>-</sup> ,3 <sup>-</sup> ,4 <sup>-</sup>		B	J $^\pi$ : L(d, $\alpha$ )=3; $\gamma$ from 1 <sup>+</sup> .
430.51 <sup>‡</sup> 3	(2) <sup>-</sup>		AB	J $^\pi$ : L(d, $\alpha$ )=1.
780 10	0 <sup>-</sup> ,1 <sup>-</sup> ,2 <sup>-</sup>		B	J $^\pi$ : $\gamma$ from 1 <sup>+</sup> .
892.681 20	( $\leq$ 3)		A	J $^\pi$ : L(d, $\alpha$ )=3.
1030 10	2 <sup>-</sup> ,3 <sup>-</sup> ,4 <sup>-</sup>		B	J $^\pi$ : Q 1097 $\gamma$ to (J+1) 185+x.
1281.5+x 4	(J+3)		D	J $^\pi$ : L(d, $\alpha$ )=1.
1310 10	0 <sup>-</sup> ,1 <sup>-</sup> ,2 <sup>-</sup>		B	J $^\pi$ : log <i>ft</i> =4.3 from 0 <sup>+</sup> parent.
1383.91 4	1 <sup>+</sup>		A	J $^\pi$ : L(d, $\alpha$ )=2.
1490 10	1 <sup>+</sup> ,2 <sup>+</sup> ,3 <sup>+</sup>		B	J $^\pi$ : L(d, $\alpha$ )=4.
1690 10	3 <sup>+</sup> ,4 <sup>+</sup> ,5 <sup>+</sup>		B	J $^\pi$ : L(d, $\alpha$ )=(6).
1890 10	(5 <sup>+</sup> ,6 <sup>+</sup> ,7 <sup>+</sup> )		B	J $^\pi$ : L(d, $\alpha$ )=3.
2.07 $\times$ 10 <sup>3</sup> 10	2 <sup>-</sup> ,3 <sup>-</sup> ,4 <sup>-</sup>		B	J $^\pi$ : L(d, $\alpha$ )=5.
2.3 $\times$ 10 <sup>3</sup> 1	4 <sup>-</sup> ,5 <sup>-</sup> ,6 <sup>-</sup>		B	E(level),J $^\pi$ : Q 1023 $\gamma$ to (J+3) 1282+x. However, alternative values of E=2308.0+x, spin=J+4 are possible because order of 1023 $\gamma$ and 1027 $\gamma$ has not been established.
2304.3+x 5	(J+5)		D	J $^\pi$ : L(d, $\alpha$ )=0.
2440 10	1 <sup>+</sup>		B	J $^\pi$ : L(d, $\alpha$ )=2.
2.9 $\times$ 10 <sup>3</sup> 1	1 <sup>+</sup> ,2 <sup>+</sup> ,3 <sup>+</sup>		B	

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued) $^{92}\text{Y}$  Levels (continued)

<u>E(level)<sup>†</sup></u>	<u>J<sup>π</sup></u>	<u>XREF</u>	<u>Comments</u>
3330.8+x 7	(J+6)	D	J <sup>π</sup> : D 1027γ to (J+5) 2304+x.
4047.9+x 8	(J+8)	D	J <sup>π</sup> : Q 717γ to (J+6) 3331+x.

<sup>†</sup> Level energies with  $\Delta E \leq 1$  keV are from least-squares fit to  $E_\gamma$  from  $^{92}\text{Sr} \beta^-$  decay; others are from (d, $\alpha$ ).

<sup>‡</sup> The order of the 430γ-953γ cascade is uncertain in  $^{92}\text{Sr} \beta^-$  decay, allowing either a 430 level or a 953 level; the former is adopted because the (d, $\alpha$ ) reaction indicates a level at 440 30 but no level near 953 keV.

 $\gamma(^{92}\text{Y})$ 

<u>E<sub>i</sub>(level)</u>	<u>J<sub>i</sub><sup>π</sup></u>	<u>E<sub>γ</sub><sup>†</sup></u>	<u>I<sub>γ</sub><sup>†</sup></u>	<u>E<sub>f</sub></u>	<u>J<sub>f</sub><sup>π</sup></u>	<u>Mult.</u>	<u>Comments</u>
185.0+x	(J+1)	185.0 <sup>‡</sup> 2	100 <sup>‡</sup>	0.0+x J		D	Mult.: from $^{238}\text{U}(^{82}\text{Se}, X\gamma)$ .
241.56	(0 <sup>-</sup> , 2, 3 <sup>+</sup> )	241.57 5	100	0.0 2 <sup>-</sup>			
430.51	(2) <sup>-</sup>	430.49 3	100	0.0 2 <sup>-</sup>			
892.681	( $\leq 3$ )	650.8 2	100 7	241.56 (0 <sup>-</sup> , 2, 3 <sup>+</sup> )			
		892.68 2	22 4	0.0 2 <sup>-</sup>			
1281.5+x	(J+3)	1096.5 <sup>‡</sup> 3	100 <sup>‡</sup>	185.0+x (J+1)		Q	Mult.: from $^{238}\text{U}(^{82}\text{Se}, X\gamma)$ .
1383.91	1 <sup>+</sup>	491.27 17	0.31 3	892.681 ( $\leq 3$ )			
		953.31 7	3.91 16	430.51 (2) <sup>-</sup>			
		1142.35 7	3.10 15	241.56 (0 <sup>-</sup> , 2, 3 <sup>+</sup> )			
		1383.93 5	100 3	0.0 2 <sup>-</sup>			
2304.3+x	(J+5)	1022.8 <sup>‡</sup> 2	100 <sup>‡</sup>	1281.5+x (J+3)		Q	Mult.: from $^{238}\text{U}(^{82}\text{Se}, X\gamma)$ .
3330.8+x	(J+6)	1026.5 <sup>‡</sup> 5	100 <sup>‡</sup>	2304.3+x (J+5)		D	Mult.: from $^{238}\text{U}(^{82}\text{Se}, X\gamma)$ .
4047.9+x	(J+8)	717.1 <sup>‡</sup> 3	100 <sup>‡</sup> 17	3330.8+x (J+6)		Q	Mult.: from $^{238}\text{U}(^{82}\text{Se}, X\gamma)$ .

<sup>†</sup> From  $^{92}\text{Sr} \beta^-$  decay.

<sup>‡</sup> From  $^{238}\text{U}(^{82}\text{Se}, X\gamma)$ .

**Adopted Levels, Gammas**Level Scheme

Intensities: Relative photon branching from each level

