

Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	E. A. McCutchan	NDS 113,1735 (2012)	1-Mar-2012

$Q(\beta^-)=1.154 \times 10^4$ 15; $S(n)=4.67 \times 10^3$ 15; $S(p)=1.31 \times 10^4$ 3; $Q(\alpha)=-1.136 \times 10^4$ 15 [2012Wa38](#)

Note: Current evaluation has used the following Q record 11550 130 4.66e+3131.351e+444 -11350 130 [2011AuZZ](#).

$S(2n)=11650$ 130; $S(2p)=29740$ 130; $Q(\beta^-n)=3760$ 130 ([2011AuZZ](#)).

[2000Mu10](#): ²³⁸U(p,F) with E(p)=30 MeV. Fragments extracted with Louvain ion-guide laser-ion source (LIGLIS) and separated with LISOL mass separator. Measured $E\gamma$, $I\gamma$, $E\beta$, $\gamma(t)$, $\beta\gamma$ - and $\gamma\gamma$ -coincidences with two HPGe detectors and three ΔE plastic detectors.

[1999Le67,1999So20](#): ⁵⁸Ni(⁸⁶Kr,X) with E(⁸⁶Kr)=60.4 MeV/nucleon. Fragments separated by the LISE3 spectrometer and identified by ΔE , total E and time of flight. Measured $T_{1/2}$, $E\beta$, $\beta(t)$ using segmented Si detector.

[1993BeZM,1992CzZX,1992CzZy,1991Be33](#): Thermal induced fission of ²³⁵U or ²³⁹Pu. Fragments separated by the LOHENGRIN recoil spectrometer and identified by ΔE -E. Measured $\beta(t)$, $T_{1/2}$ using eight planar Si detectors.

Others: [2002Kr13](#), [1999GrZQ](#), [1994Se12](#), and [1985Gu14](#).

⁶⁸Co Levels

Cross Reference (XREF) Flags

- A ⁶⁸Fe β^- decay
- B Ni(⁸⁶Kr,X γ)

E(level) [‡]	J ^{π}	T _{1/2}	XREF	Comments
0.0	(7 ⁻) [†]	0.20 s 2		% β^- =100 T _{1/2} : weighted average of 0.23 s 3 (2000Mu10), 0.17 s 3 (1999So20), and 0.18 s 10 (1991Be33).
0.0+x	1 ⁺	1.6 s 3	A	% β^- =100 T _{1/2} : from $\gamma(t)$ in 2000Mu10 .
45.0+x 3	1 ⁺		A	J ^{π} : log ft=4.9 from ⁶⁸ Fe β^- decay (J ^{π} =0 ⁺).
y			B	J ^{π} : log ft=4.9 from ⁶⁸ Fe β^- decay (J ^{π} =0 ⁺).
48.4+y 10		101 ns 10	B	T _{1/2} : from $\gamma(t)$ in 2010Da06 .
206.7+x 3			A	
390.7+x 3			A	
417.6+x 5			A	
564.9+x 4			A	
694.3+x 3			A	
973.0+x 3	1 ⁺		A	J ^{π} : log ft=5.1 from ⁶⁸ Fe β^- decay (J ^{π} =0 ⁺).
1021.0+x 3	1 ⁺		A	J ^{π} : log ft=5.1 from ⁶⁸ Fe β^- decay (J ^{π} =0 ⁺).
1274.0+x 5			A	
1412.7+x 5			A	
1591.1+x 5			A	
1816.5+x 5			A	

[†] The proton configuration in Co is $\pi f_{7/2}^{-1}$. ⁶⁹Ni is observed by [1999Mu17](#) to have a β decaying isomer with J ^{π} =(9/2⁺) and proposed configuration of $\nu g_{9/2}^{+1}$. Thus, the ground state is suggested to be the $\pi f_{7/2}^{-1} \nu g_{9/2}^{+1}$ configuration and the lowest state of the multiplet is 7⁻ ([2000Mu10](#)).

[‡] From a least-squares fit to $E\gamma$, by evaluator.

Adopted Levels, Gammas (continued)

							$\gamma({}^{68}\text{Co})$		
$E_i(\text{level})$	J_i^π	E_γ^\dagger	I_γ^\dagger	E_f	J_f^π	Mult. [†]	Comments		
45.0+x	1 ⁺	44.8	100	0.0+x	1 ⁺	D			
48.4+y		48.4	100	y			E _γ , I _γ : from Ni(⁸⁶ Kr, Xγ).		
206.7+x		161.5 3	100	45.0+x	1 ⁺		Mult.: comparison to RUL limits mult to E1, M1, E2.		
390.7+x		183.8 3	100 7	206.7+x					
		345.7 3	13 3	45.0+x	1 ⁺				
417.6+x		210.9 4	100	206.7+x					
564.9+x		358.3 4	100 50	206.7+x					
		519.9 3	68 8	45.0+x	1 ⁺				
694.3+x		649.4 3	72 16	45.0+x	1 ⁺				
		694.1 3	100 16	0.0+x	1 ⁺				
973.0+x	1 ⁺	973.0 3	100	0.0+x	1 ⁺				
1021.0+x	1 ⁺	326.7 3	27 5	694.3+x					
		630.1 3	28 6	390.7+x					
		1021.2 3	100 9	0.0+x	1 ⁺				
1274.0+x		883.3 4	100	390.7+x					
1412.7+x		1206.0 4	100	206.7+x					
1591.1+x		1027		564.9+x					
		1545.9 4		45.0+x	1 ⁺				
1816.5+x		1251.6 3	100	564.9+x					

[†] From ⁶⁸Fe β⁻ decay, except where noted.

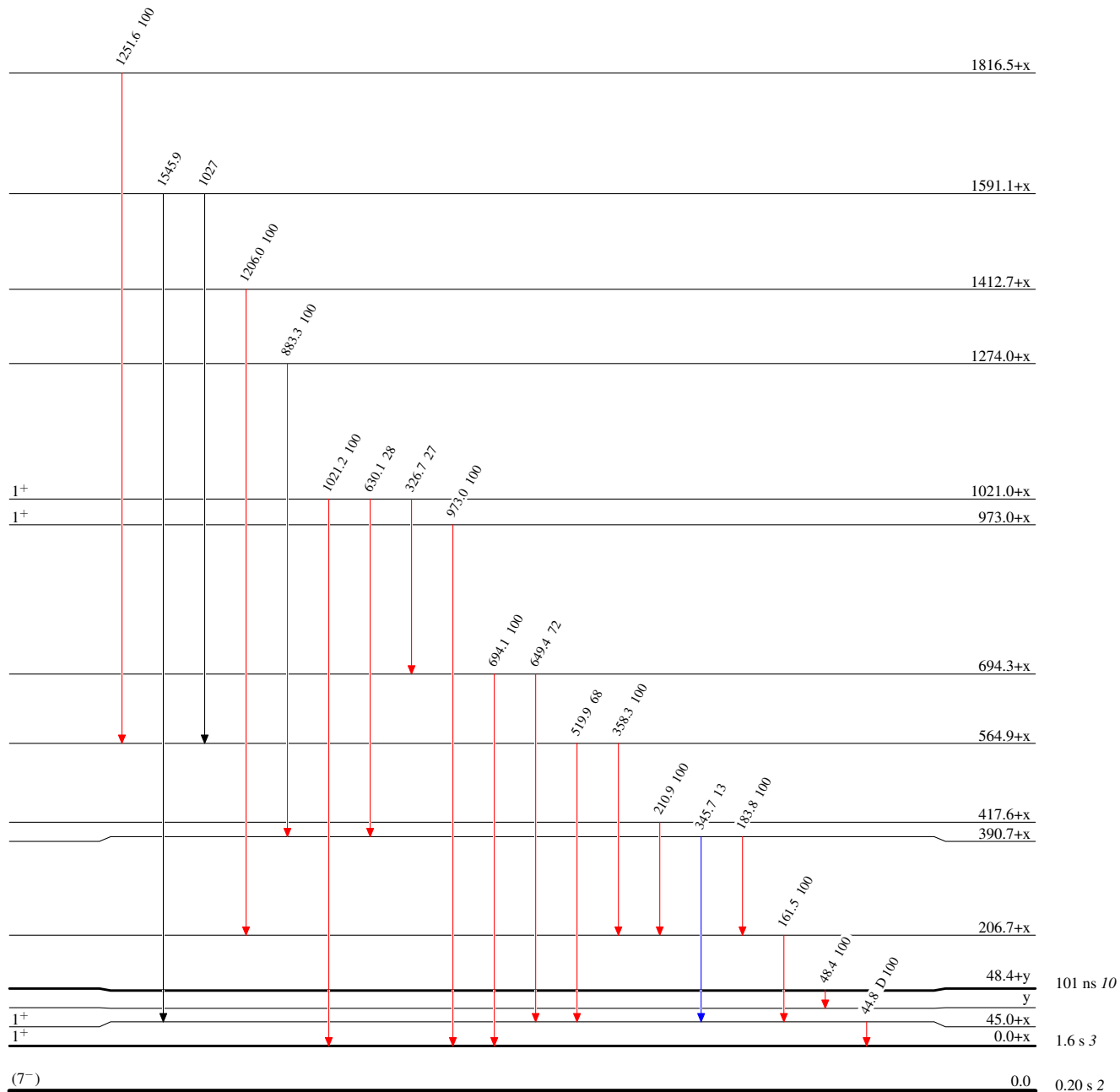
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Level Scheme

Intensities: Type not specified

Legend

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



$^{68}_{27}\text{Co}_{41}$