^{190}Ta β^- decay (5.3 s) 2009Al30

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh, [1] and Jun Chen[2]	NDS 169, 1 (2020)	15-Oct-2020

Parent: ^{190}Ta: E=0; J^π=(3); $T_{1/2}$=5.3 s *7*; Q(β^-)=5870 *SY*; %β^- decay=100.0

^{190}Ta-$T_{1/2}$,J^π: From ^{190}Ta Adopted Levels.

^{190}Ta-Q(β^-): 5870 *200* (syst, 2017Wa10).

2009Al30: ^{190}Ta from projectile fragmentation of ^{208}Pb beam at 1 GeV/nucleon with ^{9}Be target at GSI facility. Fragment Recoil separator (FRS) used to separate and identify ^{190}Ta nuclide. The secondary ions were implanted into the RISING active stopper consisting of double-sided silicon strip detectors. Measured Eγ, Iγ, $\gamma\gamma$, $\gamma\gamma$(t), β(implanted ions) correlations, Iβ, and isomer half-lives using RISING array of 15 seven-element Ge cluster detectors for γ rays, two multi-wire proportional counters for position measurements, two scintillation detectors providing time-of-flight and position information, and two scintillators and an ionization chamber (MUSIC) for energy loss measurements. See also 2012Al05 from the same group.

^{190}W Levels

E(level)[†]	J^π[‡]	Comments
0	0^+	
207 *1*	(2^+)	
454 *1*	(2^+)	J^π: (2^+) proposed by 2009Al30, stating that spin=1 at this energy in an even-even nucleus is inherently unlikely.
564 *2*	(4^+)	

[†] From Eγ data, assuming 1 keV uncertainty for each Eγ value.
[‡] From the Adopted Levels.

β^- radiations

E(decay)	E(level)	Iβ^-[†‡]	Log *ft*[†]	Comments
(5306 *SY*)	564	<22	>6.2	av Eβ=2217 *90*
(5416 *SY*)	454	<61	>5.7	av Eβ=2267 *90*
(5663[#] *SY*)	207	<38	>6.0	av Eβ=2377 *90*

[†] The decay is considered as incomplete by the evaluators, thus the β feedings values are considered as apparent (upper limits), and associated log *ft* values as lower limits.
[‡] Absolute intensity per 100 decays.
[#] Existence of this branch is questionable.

$\gamma(^{190}W)$

Iγ normalization, I(γ+ce) normalization: Decay scheme is considered as incomplete by the evaluators, thus γ-normalization factors are only approximate.

In 2012Al05, two weak and tentative γ rays of 341 and 490 keV were shown in spectral Fig. 2c, as possibly belonging to the decay of ^{190}Ta.

Eγ	Iγ[†]	E$_i$(level)	J_i^π	E$_f$	J_f^π	Mult.	α[‡]	I$_{(\gamma+ce)}$[†]	Comments
207	101 *19*	207	(2^+)	0	0^+	[E2]	0.276 *5*	129 *24*	α(K)=0.1542 *24*; α(L)=0.0923 *16*; α(M)=0.0229 *4*; α(N)=0.00542 *10*

Continued on next page (footnotes at end of table)

^{190}Ta β^- decay (5.3 s) 2009Al30 (continued)

$\gamma(^{190}W)$ (continued)

E_γ	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.	α[‡]	$I_{(\gamma+ce)}$[†]	Comments
									α(O)=0.000767 *14*; α(P)=1.229×10^{-5} *19* 206 in spectral Fig. 2c of 2012Al05.
247	55 *14*	454	(2$^+$)	207	(2$^+$)	[E2+M1]	0.26 *11*	69 *16*	α(K)=0.20 *11*; α(L)=0.0468 *20*; α(M)=0.01107 *22*; α(N)=0.00265 *6* α(O)=0.00041 *3*; α(P)=1.9×10^{-5} *12*
357	30 *12*	564	(4$^+$)	207	(2$^+$)	[E2]	0.0508	32 *13*	α(K)=0.0360 *5*; α(L)=0.01126 *16*; α(M)=0.00272 *4*; α(N)=0.000647 *9* α(O)=9.56×10^{-5} *14*; α(P)=3.18×10^{-6} *5*
454	24 *10*	454	(2$^+$)	0	0$^+$	[E2]	0.0268	25 *11*	α(K)=0.0201 *3*; α(L)=0.00512 *8*; α(M)=0.001222 *20*; α(N)=0.000291 *5* α(O)=4.39×10^{-5} *7*; α(P)=1.82×10^{-6} *3*

[†] For absolute intensity per 100 decays, multiply by ≈0.65.

[‡] Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ-ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.

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Decay Scheme

Intensities: Relative I_γ