^{216}Th α decay (26.0 ms) 2000He17,2005Ku31

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	K. Auranen and E. A. Mccutchan	NDS 168, 117 (2020)	1-Aug-2020

Parent: ^{216}Th: E=0.0; $J^\pi=0^+$; $T_{1/2}$=26.0 ms *2*; Q(α)=8072 *4*; %α decay=100.0

^{216}Th-$T_{1/2}$: weighted average of 26.3 ms *5* (2019Zh54), 26.0 ms *2* (2005Ku31), 25.4 ms *8* (2001Ha46), and 28 ms *2* (1968Va18). Others: 29 ms *+13−7* (2014Ya19), 30 ms *9* (2005Li17), 22.0 ms *+16−14* (2000Ni02), 27.0 ms *3*, 30 ms *3* (2000He17) which is assumed to be superseded by 2005Ku31.

2000He17: ^{216}Th activity from ^{170}Er(^{51}V,p4n)^{216}Th and ^{170}Er(^{50}Ti,4n)^{216}Th reactions with E(^{51}V)=214-286 MeV and E(^{50}Ti)=215-235 MeV. Recoil products separated with velocity filter SHIP and implanted into a position sensitive PIPS detector. Measured Eα, Iα, and recoil-α.

2005Ku31: the nuclei of interest were observed as the α-decay daughter of ^{216}Th nuclei produced in the ^{170}Er(^{50}Ti,4n)^{216}Th fusion evaporation reaction at GSI, Germany. The 400−μg/cm^2 thick ^{170}Eu targets were evaporated on 30−μg/cm^2 thick carbon foils. UNILAC provided the 217.5 MeV ^{50}Ti beam with an intensity of ≈200 pnA. Residues were selected with the velocity filter SHIP, and implanted into a position-sensitive 16-strip PIPS silicon detector. Eα, Eγ, Iγ, $\alpha\gamma$ coin, recoil-γ-α-γ correlations were measured. γ rays were detected, without a coincidence condition, with a Clover Ge detector placed behind the PIPS.

Others: 2019Zh54, 2014Ya19, 2005Li17, 2001Ha46, 2000Ni02, 1968Va18.

α: Additional information 1.

^{212}Ra Levels

E(level)†	J^π‡	$T_{1/2}$	Comments
0.0	0^+	13.0 s *2*	$T_{1/2}$: from the Adopted Levels. Others: 9.9 s *+46−24* (2014Ya19) and 11.8 s *+13−10* (2000Ni02).
629.3 *1*	2^+		

† From Eγ.
‡ From the Adopted Levels.

α radiations

Eα	E(level)	Iα‡	HF†	Comments
7304 *4*	629.3	0.4 *1*	1.70 *10*	Eα: from 2005Ku31. Other: 7302 keV *15* (2000He17). Iα: from 2005Ku31. Other: 0.54 *3* (2000He17).
7921 *5*	0.0	99.6 *1*	1.000	Eα: weighted average of 7921 keV *8* (1968Va18), 7919 keV *6* (2001Ha46), 7923 keV *5* (2005Ku31), and 7919 keV *15* (2019Zh54). Others: 7921 keV *23* (2014Ya19), 7920 keV *44* (2005Li17), and 7923 keV *10* (2000He17) assumed to be superseded by 2005Ku31. Iα: from 2005Ku31. Other 99.46 *3* (2000He17).

† $r_0(^{212}Ra)$=1.4695 *14* from HF(7921α)=1.0.
‡ Absolute intensity per 100 decays.

$\gamma(^{212}Ra)$

Eγ	Iγ‡	E$_i$(level)	J_i^π	E$_f$	J_f^π	Mult.†	α	Comments
629.3 *1*	0.39 *10*	629.3	2^+	0.0	0^+	E2	0.0230	α(K)=0.01624 *23*; α(L)=0.00504 *7*; α(M)=0.001273 *18*; α(N)=0.000336 *5*; α(O)=7.43×10^{-5} *11* α(P)=1.208×10^{-5} *17*; α(Q)=5.78×10^{-7} *8* Eγ: from 2005Ku31. Other: 628.3 keV *5* (2000He17). Iγ: deduced by the evaluator based on reported α feeding and internal-conversion coefficient.

Continued on next page (footnotes at end of table)

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$\gamma(^{212}Ra)$ (continued)

† From the Adopted Gammas.
‡ Absolute intensity per 100 decays.

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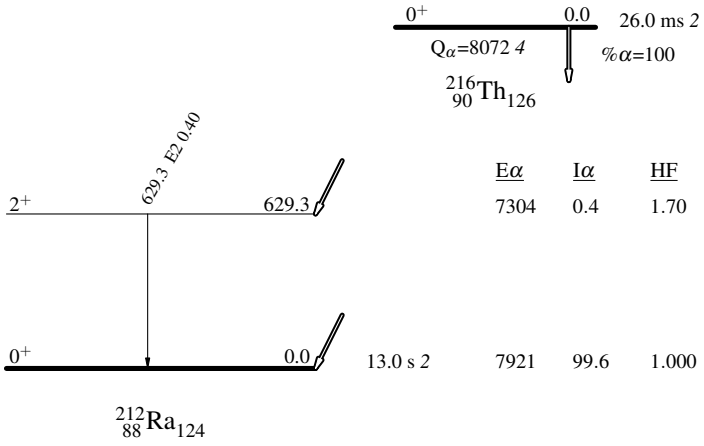
Decay Scheme

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays



	Eα	Iα	HF
	7304	0.4	1.70
	7921	99.6	1.000