^{210}Th α decay 2010He25,1995Uu01

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	F. G. Kondev	NDS 201,346 (2025)	21-Jan-2025

Parent: ^{210}Th: E=0.0; $J^\pi=0^+$; $T_{1/2}$=15.1 ms *27*; Q(α)=8069 *6*; %α decay≈100

^{210}Th-$T_{1/2}$: Weighted average 14 ms *4* (2023Ch24) and 16.0 ms *36* (2010He25).

^{210}Th-Q(α) from 2021Wa16.

2010He25: ^{210}Th nuclide produced in ^{150}Sm(^{64}Ni,4n), E=294 MeV. Target: 327-546 μg/cm^2 thick $^{147}SmF_3$ enriched to 95.6%, evaporated onto a 40 μg/cm^2 carbon foil and covered with a 10 μg/cm^2 carbon layer. Evaporation residues were separated by SHIP and implanted into a 300 μm thick, 35×80 mm^2 16-strip positron-sensitive silicon detector (PSSD). Six silicon box detectors were mounted in an open box geometry upstream from the PSSD to measure the energy of α particles which escaped from the PSSD in the backward direction. A Clover Ge detector was also installed at the focal plane for α-γ coincidence measurements with $\Delta T(\alpha\text{-}\gamma)\leq 5$ μs, however no coincidences were observed.

1995Uu01: Source produced in ^{181}Ta(^{35}Cl,6n), E=191, 199 MeV; Target: ^{181}Ta prepared by rolling with a thickness of 350 μg/cm^2; Detectors: Gas-filled recoil separator (RITU), position sensitive PIPS detector; Measured: recoil-α_1-α_2-α_3 coin, excitation functions, Eα, Iα, $T_{1/2}$; assignment to ^{210}Th was based on Eα_1(^{210}Th)-Eα_2(^{206}Ra)-Eα_3(^{202}Rn) correlations. Others (same collaboration): 1995Le15, 1995Le41.

^{206}Ra Levels

E(level)	J^π	$T_{1/2}$[†]
0.0	0^+	0.24 s *2*

[†] From Adopted Levels.

α radiations

Eα	E(level)	Iα[‡]	HF[†]	Comments
7917 *6*	0.0	100	≈1.0	Eα: From 2010He25. Others: 7922 keV *14* (2023Ch24), 7899 keV *17* (1995Uu01), 7896 keV *25* (1995Le41,1995Le15), 7810 keV *50* (1996Ik01).

[†] r_0=1.509 *9* for HF=1.0.

[‡] For absolute intensity per 100 decays, multiply by ≈1.