^{216}U α decay (4.5 ms) 2015Ma37,2015De22

History

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

Parent: ^{216}U: E=0.0; $J^\pi=0^+$; $T_{1/2}$=4.5 ms *+47−16*; Q(α)=8531 *26*; %α decay≈100.0

^{216}U-$T_{1/2}$: weighted average of 4.72 ms *+472−157* (2015Ma37) and 3.8 ms *+88−32* (2015De22) both from implant-α(t) measurements.

^{216}U-%α decay: assumed %α≈100. From theoretical α and β decay half-lives of 2.6 ms and 3.4 s, respectively in 2019Mo01, β decay is expected to be negligible (<0.1%).

2015Ma37: ^{216}U activity from ^{180}W(^{40}Ar,4n) reaction with E(^{40}Ar)=189.5 MeV from the Sector-Focusing cyclotron facility at HIRFL-Lanzhou. Fragments separated with gas-filled recoil separator for heavy ions (SHANS). Measured Eα, $\alpha\alpha$ correlations, implant-α(t) using position-sensitive silicon strip detector surrounded by eight silicon detectors in a box-like arrangement. Six correlated decay chains were observed for the ground state of ^{216}U and two correlated decay chains were observed for an isomeric level in ^{216}U. Results also presented in 2016Zh33.

2015De22: ^{216}U activity from deep-inelastic multinucleon transfer reaction ^{248}Cm(^{48}Ca,X), with E(^{48}Ca)=270 MeV from UNILAC at GSI. Fragments separated with velocity filter SHIP at GSI and implanted in position-sensitive silicon strip detector. Measured Eα, $\alpha\alpha$ correlations, implant-α(t) using silicon strip detector surrounded by six silicon detectors in a box-like arrangement. ^{216}U decay chain was identified in one sequence of three successive α decays.

^{212}Th Levels

E(level)	J^π	$T_{1/2}$	Comments
0.0	0^+	31.7 ms *13*	$T_{1/2}$: from the Adopted Levels.

α radiations

Eα	E(level)	Iα[‡]	HF[†]	Comments
8372 *30*	0.0	100	1.0	Eα: weighted average of 8384 *30* (2015Ma37) and 8340 *50* (2015De22).

[†] Deduced radius parameter, r_0=1.488 fm *35* is calculated for HF=1.0 assuming 100% ground state to ground state alpha decay.

[‡] For absolute intensity per 100 decays, multiply by ≈1.0.