^{110}Xe α decay

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	D. De Frenne and A. Negret	NDS 109,943 (2008)	1-May-2007

Parent: ^{110}Xe: E=0.0; $T_{1/2}$=105 ms *+35−25*; Q(α)=3885 *14*; %α decay=?

The half-life of ^{110}Xe was estimated by 1981Sc17 as ≈0.2 s by assuming %α=%β^+, and $T_{1/2}(\beta^+)$=0.4 s, partial half-life for β^+ decay.

The partial half-life for α decay is measured as $T_{1/2}(\alpha)$=0.11 s (2006Xu09).

The partial half-life for α decay is estimated as $T_{1/2}(\alpha)$=0.06 s *+10−3* from $r_0(^{106}Te)$=1.70 *6*. The gross β-decay theory of 1973Ta30 suggests that $T_{1/2}(\beta^+)$=0.5 s *+5−3*; Moller-Nix (1997Mo25) calculations yield $T_{1/2}(\beta^+)$=0.62 s, consistent with $T_{1/2}$ of 1973Ta30. From these partial half-lives, %α=87 *+10−32*, %ε+%β^+=13 *+32−10*, and $T_{1/2}(^{110}Xe)$=0.054 s *+84−28* are calculated.

Q(α)(^{110}Xe)=3885 *14* is the recommended value of 2003Au03.

^{106}Te Levels

E(level)	J^π
0.0	0^+

α radiations

Eα	E(level)	Iα[†]	HF[‡]	Comments
3745 *15*	0.0	100	1.0	Eα: measurement of 1993HeZS. Eα=3737 *30* was measured by 1981Sc17. Iα: only one α was observed. Any α to the expected first 2^+ state is estimated to be less than 0.02 per 100 α decays by assuming its hindrance factor to be greater than 1. The energy of ≈720 keV for the 2^+ state, extrapolated from 2^+ level energies in heavier Te isotopes, is used in calculations.

[†] α intensity per 100 α decays.

[‡] $r_0(^{106}Te)$ is estimated as 1.70 *6* from $r_0(^{102}Sn)$=1.70 *4*, $r_0(^{104}Sn)$=1.632 *14* and $r_0(^{108}Te)$=1.64 *6*.