

²²⁶Np α decay (44 ms) 2019Mi08,1993AnZS

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh, M. S. Basunia, Jun Chen et al. ,		NDS 192,315 (2023)	25-Sep-2023

Parent: ²²⁶Np: E=0; T_{1/2}=44 ms 6; Q(α)=8327 20; % α decay=100

²²⁶Np-T_{1/2}: weighted average of 48 ms 5 (2019Mi08, ER- α correlated decay at GSI); 58 ms +70-20 (1995Le15, ER- α correlated decay at Jyvaskyla), and 31 ms 8 (1990Ni05, ER- α correlated decay at GSI).

²²⁶Np-Q(α): Deduced by evaluator from E α =8180 20, assuming this α feeds the g.s. of ²²²Pa. Other: 8330 50 (2021Wa16).

²²⁶Np-% α decay: Only the α decay of ²²⁶Np has been observed, thus % α =100 is assigned.

2019Mi08: ²²²Pa produced in ¹⁸¹Ta(⁴⁸Ca,X),E=212,217,226 MeV fusion-evaporation reactions at the UNILAC accelerator of GSI, followed by separation of evaporation residues (ERs) using the SHIP velocity filter and implanted into the COMPACT Spectroscopy Set-up (COMPASS). Measured E α and half-life of ²²²Pa decay from time correlations between ERs and α particles.

1993AnZS: measured E α , I α at the U-400 cyclotron of the FLNR, JINR.

²²²Pa Levels

E(level) [†]	T _{1/2}	Comments
0	3.8 ms 6	T _{1/2} : from the Adopted Levels.
107 30		
188 30		

[†] From E α and Q(α).

α radiations

E α	E(level)	I α ^{†#}	HF [‡]	Comments
7995 20	188	50 15	2.4 9	E α : weighted average of 7990 20 (2019Mi08) and 8000 20 (1993AnZS).
8075 20	107	50 15	4.2 15	E α : weighted average of 8090 20 (2019Mi08) and 8060 20 (1993AnZS). Other: 8044 20 (1990Ni05).
8180 20	0			E α : from 2019Mi08. 2019Mi08 mention that the intensity of this α peak is comparable to that for the 8090 20 and the 7990 20 peaks, however, authors also point out possible summing with conversion electrons. 2019Mi08 did not provide any numerical values for the intensities of the three peaks.

[†] α intensity per 100 α decay, measured by 1993AnZS. 2019Mi08 stated that a broad energy distribution between 7.9 and 8.4 MeV was observed in the correlated α_1 peak, with three different α - of comparable intensities at 7.98 MeV 2, 8.09 MeV 2 and 8.18 MeV 2, which could correspond to either single α decay activities or to α -decay and conversion electron summing. No numerical values of intensities were listed for the three peaks. It should be noted that these three in Fig. 4 of 2019Mi08 are very weak, each about four counts high. Based on the weak α peaks in 2019Mi08, the α intensities could be 33% for each of the three peaks.

[‡] r₀(²²²Pa)=1.53 2 from r₀ parameters for neighboring even-even nuclei.

Absolute intensity per 100 decays.