^{45}P β^-n decay (24 ms) 2022Cr03

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Jun Chen and Balraj Singh	NDS 190,1 (2023)	20-Jun-2023

Parent: ^{45}P: E=0; $T_{1/2}$=24 ms *12*; Q(β^-n)=17090 *syst*; %β^-n decay=?

^{45}P-$T_{1/2}$: From 2022Cr03 (implants-β correlated decay curve, with assumed %β^-n=79 and %β^-2n=21; statistical uncertainty of 7 ms and systematic uncertainty of 9 ms in $T_{1/2}$ combined in quadrature by evaluators).

^{45}P-Q(β^-n): 17090 *500* (syst,2021Wa16).

Decay scheme of ^{45}P is not known.

2022Cr03: ^{45}P was produced in ^{9}Be(^{48}Ca,X),E(^{48}Ca)=172.3 MeV/nucleon at the FRIB, MSU, followed by separation of fragments of interest using Advanced Rare Isotope Separator (ARIS), and delivered to the FRIB Decay Station initiator (FDSi) consisting of fast-response YSO (yttrium orthosilicate, Y2SiO5) scintillator implantation detector, 11 HPGe clover detectors, 15 fast-timing $LaBr_3$ detectors, and 88 neutron detectors of the VANDLE array. Deduced particle identification plot of Z versus A/Q. Measured $T_{1/2}$ of ^{45}P decay from (implants)β-correlated decay curve.

1990Le03: ^{45}P produced and identified in ^{64}Ni(^{48}Ca,X), E(^{48}Ca)=44 MeV/nucleon, followed by separation of fragments using LISE spectrometer at GANIL facility. Half-life of ^{45}P was not determined in this work.

^{45}P is expected to decay by β^- decay, followed by dominant decay through β^-n and β^-2n decay modes. In 2022Cr03, %β^-n=79 and %β^-2n=21 were assumed in the determination of $T_{1/2}$ of ^{45}P decay from implants-β correlated decay curve.

^{44}S Levels

E(level)	J^π	Comments
0	0^+	Evaluators assumed that g.s. of ^{44}S is populated in ^{45}P β^-n decay.