^{27}S β^+p decay 2001Ca60

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	M. S. Basunia and A. M. Hurst	NDS 134, 1 (2016)	1-Feb-2016

Parent: ^{27}S: E=0.0; J^π=(5/2$^+$); $T_{1/2}$=15.5 ms *15*; Q(β^+p)=16880 *SY*; %β^+p decay=2.3 *9*
^{27}S-Q(%βp)=16880(syst) *400*(SY) (2012Wa38).
^{26}Si produced in the β-delayed one-proton emission of radioactive ^{27}S via an isobaric analogue state (IAS) in ^{27}P. Radioactive beam produced by projectile fragmentation of a 2−μa 95-AMeV ^{36}Ar^{18+} beam on a 357-mg/cm^2 ^{12}C target at the GANIL LISE3 facility. ^{27}S isotopes were separated and implanted in a silicon-detector telescope to measure its half life and main decay branches. Silicon-detector thicknesses were 500 μm, 500 μm, 500 μm, and 6 mm. A germanium clover was also used. Measured β, β-γ, and proton-γ events. Isotopes identified using ΔE-TOF matrix; the ΔE measured in the silicon detectors and the TOF being time of flight between production target and silicon detectors.

2001Ca60 measured an intense proton group with energy 2260 keV *60*, branching 1.9% 4, and decays with 15 ms half life. The proton group was tentatively shown to feed ^{26}Si ground state from an unknown excited state in ^{27}P, however, its branching, 2.3% 9, was not considered to obtain the total ^{27}S β^+p branching in 2001Ca60.

^{26}Si Levels

E(level)[†]	J^π
1797.3 *1*	2$^+$

[†] Taken from Adopted Levels for ^{26}Si in ENSDF database.

Delayed Protons (^{26}Si)

E(p)	E(^{26}Si)	I(p)[†]	E(^{27}P)	Comments
78.0×10^2 *40*		61 *14*	12002	I(p): In 2001Ca60 this one-proton-decay branch is reported with Branching=1.4(5)%
10.56×10^3 *40*	1797.3	39 *14*	12002	I(p): In 2001Ca60 this one-proton-decay branch is reported with Branching=0.9(4)%

[†] For absolute intensity per 100 decays, multiply by 0.023 *9*.

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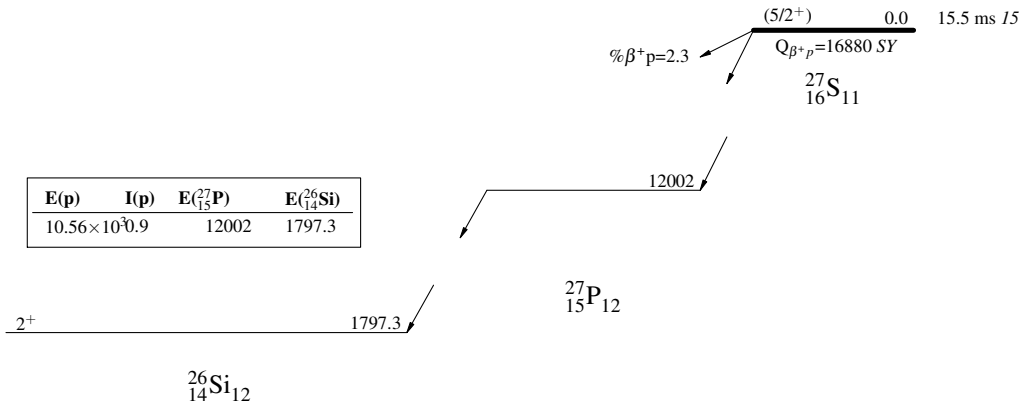
Decay Scheme

I(p) Intensities: Relative I(p)



E(p)	I(p)	E($^{27}_{15}$P)	E($^{26}_{14}$Si)
10.56×10^3	0.9	12002	1797.3