^{32}Na β^-2n decay 1993Kl02,2007Ma04,1984Gu19

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	M. S. Basunia, A. Chakraborty	NDS 197,1 (2024)	31-May-2024

Parent: ^{32}Na: E=0; J^π=(3$^-$,4$^-$); $T_{1/2}$=13.3 ms *4*; Q(β^-2n)=11378; %β^-2n decay=8.8 *25*

^{32}Na-Q(g.s.)=11378 *40*, estimated by the evaluators from the masses of ^{32}Na, ^{30}Mg, neutron in 2021Wa16.

^{32}Na-$T_{1/2}$: from 2015Bi05. Other: 13.2 ms *4* (2011Ou01).

^{32}Na-%β^-2n decay: from 2015Bi05. Other: 8.3 *21* (2011Ou01).

Other: 2008Tr04.

1993Kl02: ^{32}Na produced by bombarding a uranium carbide target with 600 MeV protons from the CERN synchrocyclotron, mass separated in the ISOLDE facility; NE102 plastic scintillator, two HPGe detectors and one neutron detector; Measured: Eγ, Iγ.

2007Ma04: ^{32}Na produced by bombarding a tantalum target with 500 MeV proton beam at ISAC/TRIUMF; 8π spectrometer comprised of 20 HPGe detectors, 20 plastic scintillating detectors; measured Eγ, Iγ.

1984Gu19: ^{32}Na was produced in the fragmentation of iridium target by 10 GeV protons from the CERN synchrotron, recoiled fragments were thermalized, ionized and mass-separated; Ge(Li) detector; measured Eγ, Iγ, β^- $\gamma\gamma$ coincidences.

2008Tr04: ^{32}Na produced in reaction ^{9}Be(^{48}Ca,X) with E=140 MeV/nucleon, beam provided by NSCL at Michigan State University, A1900 spectrometer; Products implanted on double-sided silicon strip detector as part of Beta counting system; Measured: Eγ, Iγ using segmented germanium array comprised of 16 Ge detectors.

^{30}Mg Levels

E(level)	J^π[†]	$T_{1/2}$[†]
0	0$^+$	319 ms *6*
1482.0	2$^+$	1.53 ps *20*

[†] From the Adopted Levels.

γ(^{30}Mg)

Eγ	Iγ[†]	E$_i$(level)	J^π_i	E$_f$	J^π_f	Comments
1482.4 *5*	1.8 *10*	1482.0	2$^+$	0	0$^+$	Eγ: weighted average of 1482.0 *5* (2007Ma04), 1482.8 *5* (1984Gu19) and 1482.0 *10* (2008Tr04). Other: 1482 (1993Kl02). Iγ: weighted average of 3.0 *14* (1993Kl02) and 1.2 *10* (1984Gu19) (Intensity per 100 decay). Other values: %Iγ=7 *1* (2008Tr04) of 1482γ is considerably higher than the values in 1993Kl02 and 1984Gu19. The reason for this difference is unknown. Relative intensity with respect to 885 keV γ-ray of ^{32}Mg: 4.9 *22* (1993Kl02), 4.2 *5* (2007Ma04), 2.1 *17* (1984Gu19) and 12 *2* (2008Tr04).

[†] Absolute intensity per 100 decays.

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Decay Scheme

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays