Adopted Levels, Gammas

History

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

Q(β^-)=1.481×10^4 *25*; S(n)=3.19×10^3 *29*; S(p)=2.416×10^4 *58*; Q(α)=−1.381×10^4 *30* 2021Wa16
S(2n)=4.16E3 *28*, S(2p)=43380 *740* (syst), Q(β^-n)=1.253E4 *25* (2021Wa16).
1985La03: First identification of ^{30}Ne in Ta(^{40}Ar,x) reaction at E=44 MeV/nucleon; measured fragment spectra vs mass.
1991Or01: Ta(^{48}Ca,X) at 55 MeV/nucleon. Measured projectile like fragment spectra, mass excess.
1998NoZZ, 1998NoZW: Ta(^{40}Ar,X) E=95 MeV/nucleon at RIKEN facility, measured isotopic half-life.
1999Re16, 1997Ta22 (also 2001Pe14,1999Dl01): ^{30}Ne was produced by fragmentation of ^{36}S beam at 2.8 GeV, time-of-flight and E-ΔE method for identification of fragments, four Ge detectors for γ-ray measurements; GANIL-Dubna collaboration; Measured isotopic half-life and delayed neutron branching. 1997TaZM, 1998AlZV, 1999ReZU, 1999PeZW: previous reports about formation of ^{30}Ne from fragmentation of ^{36}S beam and subsequent half-life measurements.
2017Li07 − ^{12}C(^{30}Ne, ^{29}Ne′), E=228 MeV/nucleon; measured reaction products, deduced σ and spectroscopic factors. Authors suggest for further improvement in the SM and AMD calculations for the structures of ^{30}Ne and ^{29}Ne, based on the comparison of the measured 1-neutron removal inclusive cross section with the calculated values.

Atomic excess mass measurement: 2007Ju03, 2000Sa21, 2001Sa72.

In 2006Kh08, 38.88 and 33.89 MeV/A beams of ^{30}Ne impinged on a Si target, measured σ=2587 mb *219* and σ=2849 mb *399*, respectively, for the Si(^{30}Ne,x) reaction and a reduced strong absorption radius of $<r_0^2>$=1.347 fm^2 *97* is deduced and used to study the isospin dependence.

^{30}Ne Levels

Cross Reference (XREF) Flags

A ^{1}H(^{30}Ne,^{30}Ne′γ)
B ^{9}Be(^{32}Mg,^{30}Ne$p\gamma$)
C C(^{31}Ne,^{30}Neγ)

E(level)	J$^\pi$ †	T$_{1/2}$	XREF	Comments
0.0	0$^+$	7.18 ms *22*	ABC	%β^-=100; %β^-n=12.6 *35*; %β^-2n=8.9 *23* T$_{1/2}$: from 2015St14 − $\beta\gamma$(t). Others: 7.3 ms *3* (2007Tr08), 7 ms *2* (2001Pe14,1999Re16,1997Ta22), 7.5 ms *15* (1999Dl01) is from the same group as 1999Re16 and 1997Ta22, 5.8 ms *2* (1998NoZZ). 5.8 ms *2* (1998NoZZ) is a discrepant value − from the 1-page report of 1998NoZZ or other publications the source for this discrepancy is not clear. %β^-n: from 2015Bi05. Others: 13 *4* (2007Tr08), 9 *+17−9* (1999Re16), 9 *17* (1999Dl01). %β^-2n: from 2007Tr08, 2015Bi05. Proton radius: $<r^2>^{1/2}$=2.78 fm *32* (2014Oz02), deduced from measured total charge-changing cross sections.
797 *4*	(2$^+$)	32 ps *+13−7*	ABC	B(E2)↑=0.0277 *79* (2016Do03) E(level): this energy level is the lowest of all the 2_1^+ states in the neighboring even-even N=20 isotones and provides evidence for a collective state based on a deformed 2p2h ground state (2010Fa04). J$^\pi$: expected from the B(E2)↑ measurements. T$_{1/2}$: from B(E2)↑=0.0277 *79*, adopted Eγ=794 *4* and branching ratio.
2237 *12*	(4$^+$)		B	J$^\pi$: in addition to the comparison of the experimental level energy with the predicted level energy by shell model calculation, the properties of direct two-proton knockout from the 1d$_{5/2}$ level are used to constrain the data for the J^π=(4$^+$) assignment (2010Fa04).

† From 2010Fa04, based on comparison of the experimental level energy with the predicted level energy by shell model.

Adopted Levels, Gammas (continued)

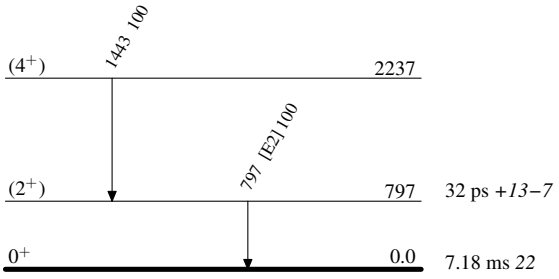
γ(^{30}Ne)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.	Comments
797	(2$^+$)	797 *4*	100	0.0	0$^+$	[E2]	B(E2)(W.u.)=10.0 *28* E_γ: weighted average of 800 *7* (2014Mi09), 791 keV *26* (2003Ya05), 801 *7* (2009Do10), 799 *5* (2016Do03 − C target), 801 *6* (2016Do03 − Pb target) − all from (^{30}Ne,^{30}Ne′γ), and 792 *4* (^{32}Mg,2pγ) (2010Fa04). B(E2)(W.u.) deduced by evaluators from B(E2)↑=0.0277 *79* (2016Do03).
2237	(4$^+$)	1443 *11*	100	797	(2$^+$)		E_γ: from (^{32}Mg,2pγ) (2010Fa04).

Adopted Levels, Gammas

Level Scheme

Intensities: Relative photon branching from each level



$^{30}_{10}Ne_{20}$