Adopted Levels, Gammas

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	M. Shamsuzzoha Basunia	NDS 112,1875 (2011)	30-Nov-2010

Q(β^-)=1.255×10^4 *7*; S(n)=1.51×10^3 *7*; S(p)=1.892×10^4 *11*; Q(α)=−1.001×10^4 *12* 2012Wa38

Note: Current evaluation has used the following Q record 12553 65 *1515* 6818.92E3 10-10.01E3 11 2011AuZZ.

Q(β^-)=12590 *110*, S(n)=1430 *110*, S(p)=18490 *200* Q(α)=−9970 *160* (2003Au03).

Some recent nuclear structure calculations: 2006Ko02, 2004Ge02, 2004La24.

Atomic mass excess measurement: 7020 keV 70 (2007Ju03).

2010Ro23: Measured one-neutron knock out cross section for 39 neutron rich isotopes, ranging from carbon to aluminium, and with neutron numbers from 8 to 22. For ^{27}Ne the measured one-neutron knock out cross section is 102(12) mb on a beryllium target.

Production cross section ~0.1 μb, measured from ^{40}Ar fragmentation reactions of both ^{9}Be(^{40}Ar,X), E=90α MeV, and ^{181}Ta(^{40}Ar,X), E=94α MeV − 2007No13.

48.01 MeV/u and 41.94 MeV/u beams of ^{27}Ne on a Si target, measured σ=2346 (39) mb and σ=2356 (37) mb, respectively, for the Si(^{27}Ne,x) reaction (2006Kh08). A squared reduced absorption radius of r_0^2=1.250 (14) fm^2 is deduced and used to study the isospin dependence.

2005Be60: ^{9}Be(^{36}S,Xγ): ^{27}Ne obtained from fragmentation of a ^{36}S beam at 77.5 MeV/nucleon on a Be target at GANIL selected through the α spectrometer; Detector: a 74 BaF_2 detector array and 4 HPGe detectors; reports the 772 (7) keV γ-ray of ^{27}Ne.

2005Iw02: Pb,C(^{28}Ne,^{27}Neγ): ^{27}Ne was identified as contaminant from the 870 keV 16 γ-ray in the Pb,C(^{28}Ne,^{28}Neγ) reaction. ^{28}Ne beam was produced by fragmentation of an ^{40}Ar beam, E=95 MeV/u, on Be target, separated in the RIPS facility at RIKEN; reports the 870 (16) keV γ-ray of ^{27}Ne.

^{27}Ne Levels

Cross Reference (XREF) Flags

A ^{9}Be(^{28}Ne,^{27}Neγ),^{1}H(^{28}Ne,^{27}Neγ)
B ^{2}H(^{26}Ne,^{27}Neγ)

E(level)†	J$^\pi$	T$_{1/2}$	L	S	XREF	Comments
0.0	(3/2$^+$)	31.5 ms *13*			AB	%β^-=100; %β^-n=2.0 *5* J$^\pi$: log *ft*=4.4 in ^{27}Ne β^- decay to the g.s. (J^π=5/2$^+$) of ^{27}Na. J^π(^{21}Ne)=3/2$^+$. T$_{1/2}$: from 2006Tr02 (63γ-t). Others: 32 ms *2* (1992Te03), 22 ms *6* (2001Pe14,1999Dl01). %β^-n: from 1992Te03. Others: 3 *1* (2006Tr02), <3 (2001Pe14,1999Dl01).
765 *1*	(3/2$^-$)		(0,1)	0.32 *4*	AB	J$^\pi$: from (d,p) cross section in inverse kinematics reaction of ^{2}H(^{26}Ne,^{27}Neγ) and multipolarity constraints for 765γ, 120γ and 885γ to the g.s. J^π=(3/2$^+$), J^π=(1/2,3/2,5/2)$^-$ proposed in 2006Ob01. J^π=(3/2$^-$) is supported by shell model calculation (2006Te04) with a configuration: $\nu p_{3/2}$ and L=(0,1) from (^{1}H(^{28}Ne,^{27}Neγ)) reaction study.
885 *2*	(1/2$^+$)	<10 ps	(0,1)	1.07 *7*	AB	J$^\pi$: From comparison of the experimental level energy with the shell model calculation. T$_{1/2}$: The upper limit of T$_{1/2}$ for this state is proposed in 2006Te04 based on the symmetric shape of the 885-keV photopeak.

† From γ-ray energies.

Adopted Levels, Gammas (continued)

$\gamma(^{27}Ne)$

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#]	Comments
765	$(3/2^-)$	765 *1*		0.0	$(3/2^+)$		
885	$(1/2^+)$	119	24 *3*	765	$(3/2^-)$	D	E_γ: From ^{9}Be(^{28}Ne,^{27}Neγ) (2006Te04).
		885 *2*	100 *3*	0.0	$(3/2^+)$	D+Q	

† From ^{2}H(^{26}Ne,^{27}Neγ), except otherwise noted.
‡ From ^{9}Be(^{28}Ne,^{27}Neγ),^{1}H(^{28}Ne,^{27}Neγ).
# Proposed in 2006Te04 ((^{28}Ne,^{27}Neγ),(^{28}Ne,^{27}Neγ)), on the basis of 119γ and 885γ branching ratio from the 885-keV level and the upper limit of the level half-life.

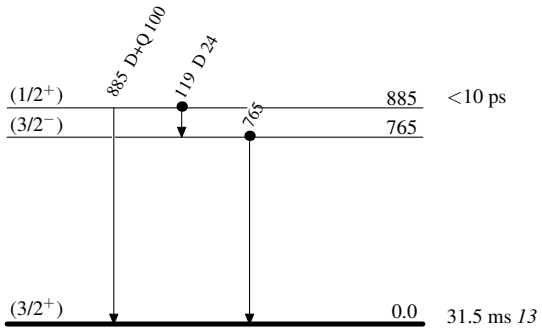
Adopted Levels, Gammas

Legend

Level Scheme

Intensities: Relative photon branching from each level

● Coincidence



$^{27}_{10}Ne_{17}$