Adopted Levels

S(p)=−1556 *41*; Q(α)=−9.26e3 *40* 2012Wa38

Theoretical works:

2011Sh17: Simple potential model comparison of ^{14}F and its mirror nucleus ^{14}B, and a critical analysis of the 2010Go11 results. The main critique is connected with the suggestion that in 2010Go16 the observed Jπ=3$^-$ state at E(^{13}O+p)=3.05 MeV is at too low an energy and that its deduced spectroscopic factor is not appropriate; the authors suggest the E(^{13}O+p)=3.05 MeV state is the Jπ=1$^+$ state and mirror of ^{14}B*(1.28 MeV).

2011Sh21: Comparison of ab initio no-core Shell Model calculations with data on ^{14}F and its mirror ^{14}B nucleus.

2010Ma06: Performed ab initio no-core Shell Model calculations of the mass of ^{14}F and its mirror ^{14}B nucleus along with the ^{13}O nucleus. In addition they calculated the predicted excitation energies for ^{14}F and ^{14}B.

See earlier predictions on ^{14}F ground state properties reported in 1978Gu10, 1984An18, 1993Po11, 2000Po32, 2008Va13.

^{14}F Levels

Cross Reference (XREF) Flags

A ^{1}H(^{13}O,p)

E(level)[†]	J$^\pi$	T$_{1/2}$	$\Gamma/\Gamma_{s.p.}$	XREF	Comments
0	2$^-$	910 keV *100*	0.85	A	E(level): mass excess=31960 keV *50*.
0.54×10^3 *18*	1$^-$	≈1 MeV	0.6	A	
1490 *72*	3$^-$	210 keV *40*	0.55	A	
2.79×10^3 *11*	4$^-$	550 keV *100*	0.5	A	

[†] S(p)(^{14}F)=1.56 MeV *4*.

^{1}H(^{13}O,p) 2010Go16,2012Go11

The authors measured the excitation function for ^{1}H+^{13}O elastic scattering. Resonances observed in 2010Go16 indicate the first observation of ^{14}F. The work was also reported in 2012Go11.

A beam of 31 MeV/A ^{13}O ions was produced via the ^{1}H(^{14}N,^{13}O) reaction at the TAMU Cyclotron Institute. The beam energy was degraded to ≈10 MeV/A at the entrance of a methane (CH_4) filled scattering chamber. A thin plastic scintillator along with a windowless ionization chamber provided identification of ^{13}O particles at the entrance of the scattering chamber. As the ^{13}O ions passed through the chamber, ^{1}H(^{13}O,p) scattering reactions occurred. A pair of silicon ΔE-E telescopes located ≈51 cm from the chamber entrance detected the scattered protons. The energy spectrum of scattered protons, which reflects the elastic scattering excitation function, was evaluated by R-matrix analysis to determine ^{14}F resonances involved in the reaction.

^{14}F Levels

E(level)[†]	J^{π}	$T_{1/2}$	$\Gamma/\Gamma_{s.p.}$	Comments
0	2^-	910 keV *100*	0.85	E(level): mass excess=31960 keV *50*.
				E(level): E_{res}(^{13}O+p)=1.56 MeV *4*.
0.54×10^3 *18*	1^-	≈1 MeV	0.6	E(level): E_{res}(^{13}O+p)=2.10 MeV *17*.
1490 *72*	3^-	210 keV *40*	0.55	E(level): E_{res}(^{13}O+p)=3.05 MeV *6*.
2.79×10^3 *11*	4^-	550 keV *100*	0.5	E(level): E_{res}(^{13}O+p)=4.35 MeV *10*.

[†] S(p)(^{14}F)=1.56 MeV *4*.

REFERENCES FOR A=14

1978GU10 K.Gul - J.Phys.Soc.Jpn. 44, 353 (1978).
1984AN18 M.S.Antony, A.Pape - Phys.Rev. C30, 1286 (1984).
1993PO11 N.A.F.M.Poppelier, A.A.Wolters, P.W.M.Glaudemans - Z.Phys. A346, 11 (1993).
2000PO32 I.V.Poplavsky - Bull.Rus.Acad.Sci.Phys. 64, 795 (2000).
2008VA13 J.P.Vary, P.Maris, A.Shirokov - Int.J.Mod.Phys. E17, Supplement 1, 109 (2008).
2010GO11 N.G.Goncharova, N.E.Mashutikov - Bull.Rus.Acad.Sci.Phys. 74, 861 (2010); Izv.Akad.Nauk RAS, Ser.Fiz 74, 902 (2010).
2010GO16 V.Z.Goldberg, B.T.Roeder, G.V.Rogachev et al. - Phys.Lett. B 692, 307 (2010).
2010MA06 P.Maris, A.M.Shirokov, J.P.Vary - Phys.Rev. C 81, 021301 (2010).
2011SH17 R.Sherr, H.T.Fortune - Phys.Lett. B 699, 281 (2011).
2011SH21 A.M.Shirokov, J.P.Vary, V.A.Kulikov et al. - Bull.Rus.Acad.Sci.Phys. 75, 463 (2011); Izv.Akad.Nauk RAS, Ser.Fiz 75, 499 (2011).
2012GO11 V.Z.Goldberg, B.T.Roeder, G.V.Rogachev et al. - J.Phys.:Conf.Ser. 337, 012008 (2012).
2012WA38 M.Wang, G.Audi, A.H.Wapstra et al. - Chin.Phys.C 36, 1603 (2012).