

$^1\text{H}(^{13}\text{O},\text{P})$  2010Go16,2012Go11

Type	Author	History	Citation	Literature Cutoff Date
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The authors measured the excitation function for  $^1\text{H}+^{13}\text{O}$  elastic scattering. Resonances observed in 2010Go16 indicate the first observation of  $^{14}\text{F}$ . The work was also reported in 2012Go11.

A beam of 31 MeV/A  $^{13}\text{O}$  ions was produced via the  $^1\text{H}(^{14}\text{N},^{13}\text{O})$  reaction at the TAMU Cyclotron Institute. The beam energy was degraded to  $\approx 10$  MeV/A at the entrance of a methane ( $\text{CH}_4$ ) filled scattering chamber. A thin plastic scintillator along with a windowless ionization chamber provided identification of  $^{13}\text{O}$  particles at the entrance of the scattering chamber. As the  $^{13}\text{O}$  ions passed through the chamber,  $^1\text{H}(^{13}\text{O},\text{p})$  scattering reactions occurred. A pair of silicon  $\Delta\text{E}$ -E telescopes located  $\approx 51$  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  $^{14}\text{F}$  resonances involved in the reaction.

 $^{14}\text{F}$  Levels

E(level) <sup>†</sup>	$\text{J}^\pi$	$\text{T}_{1/2}$	$\Gamma/\Gamma_{\text{s.p.}}$	Comments
0	$2^-$	910 keV 100	0.85	E(level): mass excess=31960 keV 50. E(level): $\text{E}_{\text{res}}(^{13}\text{O}+\text{p})=1.56$ MeV 4.
$0.54 \times 10^3$ 18	$1^-$	$\approx 1$ MeV	0.6	E(level): $\text{E}_{\text{res}}(^{13}\text{O}+\text{p})=2.10$ MeV 17.
1490 72	$3^-$	210 keV 40	0.55	E(level): $\text{E}_{\text{res}}(^{13}\text{O}+\text{p})=3.05$ MeV 6.
$2.79 \times 10^3$ 11	$4^-$	550 keV 100	0.5	E(level): $\text{E}_{\text{res}}(^{13}\text{O}+\text{p})=4.35$ MeV 10.

<sup>†</sup>  $\text{S}(\text{p})(^{14}\text{F})=1.56$  MeV 4.