^{20}Ne(^{3}He,^{8}Li):NSCL 1978Be26

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	J. Kelley, T. Truong, C. G. Sheu	ENSDF	21-June-2016

1978Be26:

The authors studied the level structure of ^{15}F populated using the ^{20}Ne(^{3}He,^{8}Li) reaction. The resulting excitation spectrum shows evidence for the ground and first excited states.

A beam of 74.5 MeV ^{3}He ions impinged on 150-200 torr of enriched (99.95%) ^{20}Ne gas in cells that were located in the Enge spectrometer target chamber at Michigan State University. Data collected at 10° used a gas cell with 0.45 mg/cm^2 Mylar foil windows, while data collected at 9°, 11°, and 13° used a gas cell with a 2.2 mg/cm^2 Ni foil exit window. ^{8}Li was detected in the focal plane of the spectrometer. The peaks were analyzed to obtain Q-values, mass excesses and widths.

The peaks were fitted by Gaussian shapes.

The authors also evaluated the IMME parameters for the A=15 T=3/2 analog states.

^{15}F Levels

E(level)	J$^{\pi}$	Γ	E(p+^{14}O)$_{cm}$ (keV)	Comments
0	1/2^{+}	>900 keV	1.6×10^3 *2*	E(level): mass excess=16.9 MeV *2*. The lack of a minimum between the ground and first excited states makes a mass excess determination difficult. Likewise, the lack of an angular momentum barrier for the $s_{1/2}$ state results in a large tail toward higher energies and complicates quantification of the width.
1.2×10^3 *2*	5/2^{+}	240 keV *30*	2802 *25*	E(level): mass excess=18.088 MeV *25*. The value for this resonance energy is sometimes not rigorously deduced; see for example 2005Fo10 who list E_{res}=2.8 MeV with 200 keV uncertainty. This value has been carried over into other analyses. The resonance energy is derivable with 25 keV resolution using the known p and ^{14}O mass excesses.