

Spectroscopy of neutron-deficient ^{19}Na nucleus

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Studies of proton-rich nuclei can provide fundamental insights into the properties of nuclear structure and interactions that are not manifest in the valley of stability. Light exotic nuclei are the perfect proving ground for our understanding of the behavior of nuclear matter under extreme proton to neutron ratios. Availability of radioactive beams allows us to use simple reactions such as elastic scattering to populate states in exotic nuclei. I will present results on the spectroscopy of neutron-deficient unbound isotope ^{19}Na . Resonance elastic scattering of ^{18}Ne on protons was measured using inverse geometry and the very thick target technique [1]. The experiment was carried out at the TwinSol radioactive nuclear beam facility of the University of Notre Dame [2]. The beam of ^{18}Ne was produced via the $^3\text{He}(^{16}\text{O}, ^{18}\text{Ne})n$ reaction. The analysis of the excitation function of elastic scattering was carried out with the R-Matrix formalism and Potential model approach. The spectrum of ^{19}Na was measured up to excitation energy of 2.75 MeV. Results of this work will be compared with the F.de Oliveira et.al. [4] where excitation function was measured up to 6 MeV.

[1] K.P. Artemov et al., Sov. J. Nucl. Phys. 52, 408 (1990).

[2] M.Y. Lee et. al., Nucl. Instrum. Meth. A422, 536, (1995).

[3] C. Angulo et. al., Phys. Rev.C.,67,014308, (2003)

[4] F.de Oliveira et. al.,Eur. Phys. J. A 24, 237-247, (2005)