

Abstract Submitted
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Studies of the $^{19}\text{O}(d,p)^{20}\text{O}$ reaction at RESOLUT DANIEL SANTIAGO-GONZALEZ, INGO WIEDENHOEVER, L.T. BABY, J. BAKER, S.A. KUVIN, G.V. ROGACHEV, Florida State University, L.E. LINHARDT, J.C. BLACKMON, Louisiana State University — The energetic location of the $d_{3/2}$ -orbital in neutron-rich nuclei is of particular interest as it determines the location of the drip-line in the oxygen isotopes. Its behaviour has recently been discussed as a consequence of three-body forces¹. Manifestations of such forces are traced through the location of the $d_{3/2}$ orbital, which closer to stability leads to highly excited states. In order to study the location and fragmentation of this orbital in ^{20}O , we performed an experiment at the RESOLUT radioactive beam facility of the Florida State University accelerator laboratory. We produced a beam of the short-lived ^{19}O isotope with an intensity of 1×10^5 pps, 65% purity and 4.11 MeV/u. This beam was used to study the spectroscopic factors of bound and unbound states of ^{20}O using the (d,p) reaction in inverse kinematics and components of the new ANASEN detector array. We will present the methods used and the first results of this experiment regarding the spectroscopic factors of unbound $d_{3/2}$ resonances in ^{20}O .

¹T. Otsuka et al., Phys. Rev. Lett 105, 032501 (2010)

Daniel Santiago-Gonzalez
Florida State University

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