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Quasi-free Proton Knockout Reactions on the Oxygen Isotopic Chain[1] LEYLA ATAR, University of Guelph, TU Darmstadt, GSI, THOMAS AUMANN, TU Darmstadt, GSI, CARLOS BERTULANI, Texas AM University-Commerce, STEFANOS PASCHALIS, University of York, R3B COLLABORATION
— It is well known from electron-induced knockout data that the single-particle (SP) strength is reduced to about 60-70% for stable nuclei in comparison to the independent particle model due to the presence of short- and long-range correlations. This finding has been confirmed by nuclear knockout reactions using stable and exotic beams, however, with a strong dependency on the proton-neutron asymmetry. The observed strong reduction of SP cross sections for the deeply bound valence nucleons in asymmetric nuclei is theoretically not understood. To understand this dependency quantitatively a complementary approach, quasi-free (QF) knockout reactions in inverse kinematics, is introduced. We have performed a systematic study of spectroscopic strength of oxygen isotopes using QF (p,2p) knockout reactions in complete kinematics at the R3B/LAND setup at GSI with secondary beams containing $^{13-24}$O. The oxygen isotopic chain covers a large variation of separ ation energies, which allow a systematic study of SF with respect to isospin asymmetry. We will present results on the (p,2p) cross sections for the entire oxygen isotopic chain obtained from a single experiment. By comparison with the Eikonal reaction theory the SF and reduction factors will be presented.

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