



Beitrag ID: 2

Typ: **nicht angegeben**

Quasi-free (p,2p) and (p,pn) reactions on neutron-rich Oxygen Isotopes

Montag, 16. Juni 2014 11:00 (10 Minuten)

Quasi-free knock-out reactions are a direct tool to study the occupancy and the location of valence and deeply bound single particle states. Recent experiments have showed a reduction of spectroscopic strengths of about 60-70% for stable nuclei. When going to driplines this tendency is changing, loosely bound nucleons have spectroscopic strengths close unity while deeply bound nucleons have a large reduction of the spectroscopic strength. We want to make a systematic study of spectroscopic factors of the Oxygen isotopic chain using quasi-free (p,2p) and (p,pn) knock-out reactions in inverse kinematics. This will allow us a qualitative and quantitative understanding of spectroscopic factors in a large variation of isospin asymmetry. For this we performed an experiment at the R3B/LAND setup at the GSI Facility in 2010 with a secondary beam from ^{14}O to ^{24}O at the energies around 400-500 MeV/u. Six isotopes have been analyzed so far and the preliminary results will be presented. The results include the partial cross sections, gamma ray spectra of the residual fragments in coincidence, and their spectroscopic strengths. This work is supported by HIC for FAIR and BMBF project 05P12RDFN8.

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Sitzung Einordnung: Recent Results