

EXPLORING CORRELATIONS IN EXOTIC NUCLEI

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4:00 P.M. NSH 124

–Note special date for Nuclear Seminar–

I will discuss two experiments done to investigate how nuclear correlations change with n/p asymmetry. First, a digital-signal-processing technique was developed to measure neutron total cross sections of rare isotopes and was applied to the neutron-rich isotope Ca-48. The measured isotopic differences between Ca-40 and Ca-48 imply that the strength of neutron correlations changes very little with neutron number. In contrast, previous results from hadron-induced knockout reactions imply a strong trend with asymmetry, such that deeply-bound nucleons feel much stronger correlations than do weakly-bound nucleons. This was observed in our second experiment, single-nucleon knockout on Ca-36, in which we deduced a tiny spectroscopic factor for the deeply bound valence neutron. However, since the remaining spectroscopic strength was not found in the excited states of the neutron-knockout residue, we are led to believe that the deduced spectroscopic factor is actually too low, and to question the above-mentioned trend and the eikonal knockout reaction theory used to obtain it.

Nuclear
Seminar

All interested
persons are
cordially
invited to
attend.