

Tuesday

May 1st

At 3:45pm



Connection between ANCs and Resonance Widths for Mirror Nuclei

Abstract:

To determine the ANCs for proton-rich nuclei of importance for nuclear astrophysics, the corresponding transfer reactions often require the use of weak radioactive beams. Meantime, the neutron ANC of mirror to proton-rich nuclei can be determined using higher intensities of stable beams at energies below the Coulomb barrier where the sensitivity to optical potentials is minimized. Using the Pinkston-Satchler equation and surface integral formalism I developed a formalism which allows one to determine a model-independent connection between the proton and neutron mirror ANC, which also is applied for alpha-particle ANC of the mirror nuclei.

Near the edge of stability, where neutron separation energies become very small, the corresponding mirror proton states are resonances. The neutron ANC is related to the corresponding mirror nucleus resonance width. Again, using the surface-integral formalism I derive, a priori, the model-independent connection between the ANC and the resonance widths of mirror nuclei.

A few examples of both nucleon and alpha-particle mirror nuclei are considered for bound states and resonances followed by experimental suggestions for conducting experiments at the Cyclotron Institute.

**CYCLOTRON
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Room 228

Refreshments will be
served at 3:30pm



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