



Contribution ID: 290

Type: Oral

Investigating the character of the PDR in ^{96}Mo via one-nucleon transfer reactions

Thursday, 30 November 2023 16:45 (15 minutes)

The low-lying E1 strength which has been termed the pygmy dipole resonance (PDR), manifests as a concentration of 1^- states below and around the neutron threshold. It has thus far been observed in neutron-rich nuclei and its study may have implications on the nuclear equation of state and nucleosynthesis. Since its discovery, there has been a great deal of work in an attempt to understand its nature, both theoretically and experimentally. The degree to which the dipole states are collective is amongst the characteristics of the PDR under scrutiny. This study is an attempt to probe the nature of the PDR, specifically the single-particle or collective character of these states. One-nucleon transfer reactions are the probes of choice for this goal due to their selectivity in probing single-particle configurations. The neutron stripping reaction, $^{97}\text{Mo}(p,d)^{96}\text{Mo}$ and the neutron pickup reaction $^{95}\text{Mo}(d,p)^{96}\text{Mo}$, were used to populate the nucleus of interest, ^{96}Mo . The experiment was conducted at the MAGNEX facility of INFN-LNS in Catania, Italy. The ejectiles were momentum-analyzed by the MAGNEX spectrometer and detected by its focal-plane detection system. In this talk, the results of this experiment will be presented.

This work is based on the research supported in part by the National Research foundation (NRF) of South Africa grant number 118846

Attendance Type

In-person

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Session Classification: Session 5

Track Classification: Nuclear Structure, Reactions and Dynamics