Contribution ID: **79** Type: **Poster**

Determination of α+nucleus optical potential relevant for p-process study from the ^{nat}In(α, α) elastic scattering

Tuesday, 18 July 2023 19:10 (15 minutes)

Nucleosynthesis of heavier nuclei (Z $>$ 26) generally occurs through s or r-process. However, certain neutron deficient nuclei in stars are produced neither by r or s-process. They are produced by (γ, α), (γ,p), and (γ,n) reactions and are known as p-nuclei. Due to the better availability of ion beams over γ-beams, the inverse reaction cross-sections on p-nuclei are measured and gamma induced cross-sections are extracted using the principle of detailed balance in the framework of statistical model. Statistical model calculation is sensitive to the choice of the nuclear input parameters. The entrance channel optical potential is one of the sensitive input parameters. For the study of the (α, γ) reaction, the α-optical potential plays a crucial role.
There are numerous global alpha optical model potentials, but they are unable to adequately explain the (α, γ) reaction data. The ^{113}In(α, γ) reaction requires accurate knowledge of the α-optical potential at low energies. However, due to the dominance of coulomb part, the elastic scattering measurements need to be done at above barrier energies. In present work, elastic scattering angular distribution measurements of ^{nat}In(α, α) have been performed at two different energies (E = 26 and 29 MeV) above the Coulomb barrier. The data will be analyzed to obtain local α-optical potential parameters using search codes like SFRESCO.

Primary authors: Ms BASAK, Dipali (Saha Institute of Nuclear Physics, HBNI); Mr BAR, Tanmoy (Saha Institute of Nuclear Physics, HBNI); Mr SAHOO, Lalit Kumar (Saha Institute of Nuclear Physics, HBNI); Mr SAHA, Sukhendu (Saha Institute of Nuclear Physics, HBNI); Dr RANA, Tapan Kumar (Variable Energy Cyclotron Centre, HBNI); Dr BHATTACHARYA, Chandana (Variable Energy Cyclotron Centre, HBNI); Mr MANNA, Santu (Variable Energy Cyclotron Centre, HBNI); Dr KUNDU, Samir (Variable Energy Cyclotron Centre, HBNI); Mr SAHOO, Jayanta Kumar (Variable Energy Cyclotron Centre); Mr MEENA, Jaikiran (Variable Energy Cyclotron Centre); Mr SAHA, Amiya Kumar (Variable Energy Cyclotron Centre); Prof. BASU, Chinmay (Saha Institute of Nuclear Physics)

Presenter: Ms BASAK, Dipali (Saha Institute of Nuclear Physics, HBNI)

Session Classification: Poster Session

Track Classification: Experimental Nuclear Structure