

PLPAC meeting 2024-1

Contribution ID : 29

Exploring the di-neutron transfer reactions and their effect on barrier distributions using $^{16,18}\text{O}$ off a ^{159}Tb target

Monday 22 Apr 2024 at 15:00 (00h15')

PI info :

Dr. Dipika Patel (Mr. Chirag Bhuptani)

local collaborator info :

Dr. Y.K. Gupta and his group

Collaborators Name :

Dr. B.K. Nayak

Motivation :

We have recently conducted measurements on quasi-elastic scattering using $^{16,18}\text{O}$ projectiles directed at ^{90}Zr nuclei at energies near the Coulomb barrier. Our findings reveal notable discrepancies between the data obtained for ^{18}O and ^{16}O , suggesting a distinct involvement of di-neutron transfer in the fusion process of ^{18}O with ^{90}Zr . Specifically, the fusion barrier distribution for $^{18}\text{O}+^{90}\text{Zr}$ exhibits a skew towards lower barrier heights, contrasting sharply with the nearly Gaussian distribution observed in the case of $^{16}\text{O}+^{90}\text{Zr}$ reactions. This discrepancy implies that ^{16}O behaves like an inert nucleus during fusion processes.

Beam time requirement in shifts :

21

Beam :

$^{16}\text{O},^{18}\text{O}$

Beam Energy :

58MeV-80MeV

Beam Current :

2-5pA

Beam Port :

Cascade Hall 0D

Buncher Required :

No

Target / Sample Details :

^{159}Tb

Whether the experiment is part of PhD work ? :

Yes

Name of the PhD student and year of registration :

Mr. Chirag Bhuptani

Whether the experiment is part of Post-Doc work ? :

No

information on the past beamtime at PLF :

5 days beam time was availed for measuring elastic and alpha particles using ^9Be beam.

Publication information related to prior work at the PLF :

Results Presented in the DAE symposium on Nuclear Physics.

Primary authors : Dr. PATEL, Dipika (NIT SURAT)

Co-authors :

Presenter : Dr. PATEL, Dipika (NIT SURAT)

Session classification : --not yet classified--

Track classification : --not yet classified--

Type : --not specified--