

Seminar

Institute for Plasma Research

Title : Role of nuclear dissipation in heavy ion fusion-fission reactions

Speaker: Dr. Niraj Kumar Rai
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Date : 30th December 2020 (Wednesday)

Time : 03.30 PM

Venue : Online - Join the talk:

https://meet.ipr.res.in/Dr.NirajKumar_PDFTalk

Abstract :

The fusion-fission process of the excited compound nucleus can be understood by the evaporation of particles such as alpha, proton, neutron, gamma, and fission fragments. In the collision between two heavy nuclei, quasi-fission as well as fusion-fission has a considerable contribution in the process. The measurement of the pre-scission multiplicity of light charged particles [1], the neutrons [2–3], and GDR γ rays [4], evaporation residue cross sections [5], and the mass and angular distribution of the fission fragments [6] are well-established tools to understand the heavy-ion induced fusion-fission process. Nuclear dissipation plays an important role in the nuclear physics research area. The presence of nuclear dissipation in the fusion-fission process is observed but it was not mentioned that how it depends on the entrance channel parameters. Therefore, it was studied about the effect of entrance channel parameters like projectile energy, mass asymmetry, and Coulomb factor ZPZT [7]. The pre- and post-scission neutron multiplicities were measured for the reactions $^{18}\text{O} + ^{186}\text{W}$ at different excitation energies populating the compound nucleus ^{204}Pb , using the National Array of Neutron Detectors (NAND) facility at IUAC, New Delhi, India [8]. Here, it was investigated about the entrance channel effect on the nuclear dissipation involved in the heavy ion fusion-fission dynamics. Specifically, the role of the entrance channel parameters on the nuclear dissipation was studied.

References:

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