

Seminar

Institute for Plasma Research

Title: Study of Reaction Cross-Sections for Advanced Reactors and Astrophysical Applications
Speaker: Dr. Vibhuti R Vashi
M S University of Baroda, Vadodara
Date: 08th November 2024 (Friday)
Time: 03.30 PM
Venue: Board Room, IPR

Abstract

Energy is an important part of powering human technologies and for sustainable economic growth. Nuclear is a more accessible, sustainable, and affordable low-carbon energy power option. Advanced nuclear reactors provide clean and reliable energy with advanced safety options and optimized cost-effective designs. Therefore, collaborative efforts to develop next generation nuclear energy systems are taken to provide the future energy needs of the world. The neutrons, protons, and other particles produced during the nuclear processes in the reactors demand nuclear data for development such as nuclear waste management, reduction in transmutation of structural materials, and long life of reactors. A dataset of neutral and charged particle induced reactions will fulfil the objectives and also help us to enhance the data libraries. Besides nuclear technology, nuclear data are required to address the quest of an interdisciplinary branch of Physics: nuclear astrophysics such as the origin of the chemical elements, the inner workings of our sun, the evolution and explosions of stars, and the origin, composition, age, and ultimate fate of the Universe. The present work is a small contribution to the astrophysical p-process which is responsible for the synthesis of neutron deficient nuclei. The present work has been carried out to provide neutron, and proton induced nuclear data for the reactor and astrophysical applications. The results were validated with the previously published experimental dataset extract from the EXFOR database and various nuclear models of statistical nuclear model code TALYS 1.9/1.95, EMPIRE-3.2.3, and ALICE-2014 codes.
