Ms. Madhumitha Shree S

Research Scholar (I - Year)
Nuclear Theory Laboratory
Department of Physics, Bharathiar University

Speaks on

"Machine Learning Approach for Nuclear Data Analysis"

Abstract:

Statistics, data science, and Machine Learning form important fields of research in modern science. They describe how to learn and make predictions from data and enable the extraction of key information about physical processes and the underlying scientific laws based on large datasets. Besides many applications of ML in Nuclear Physics domain, recently, the potential role of ML in supporting cross section evaluation and an ML augmented nuclear data evaluation pipeline for neutron-induced reactions cross section has shed a new light. Nuclear data studies including cross-section data, decay data, and nuclear structure data, are critical for a wide range of applications, such as nuclear reactor design, nuclear medicine, and fundamental nuclear physics research. Traditional methods frequently entail lengthy experiments and intricate theoretical models for the collection and analysis of nuclear data. Machine learning (ML) approaches have become increasingly effective in recent years as a means of accelerating and improving the review and analysis of nuclear data. Recently ML algorithms, such as neural networks, support vector machines, and random forests, have proven successful for predicting nuclear reaction cross-sections, estimating uncertainties, and classifying nuclear data types. In this presentation, an introduction to ML and some preliminary results of the ML based regression results for the nuclear cross-section of ^{232}Th(n,2n)^{231}Th will be discussed.

About the Speaker:

Ms. Madhumitha Shree S is from Salem and has completed both her undergraduate and postgraduate in Physics at PSGR Krishnammal College for Women, Coimbatore. Her broad field of research is about the studies of low energy neutron induced and heavy ion induced reactions and associated nuclear data activities.

Venue: Sir C.V. Raman Hall   **Date:** 10.10.2023   **Time:** 10.00 am

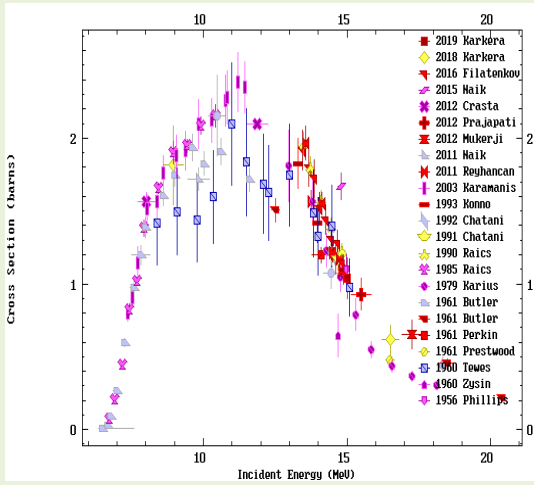Kindly be seated by 10:00 am and switch off your mobile phone during the lecture.

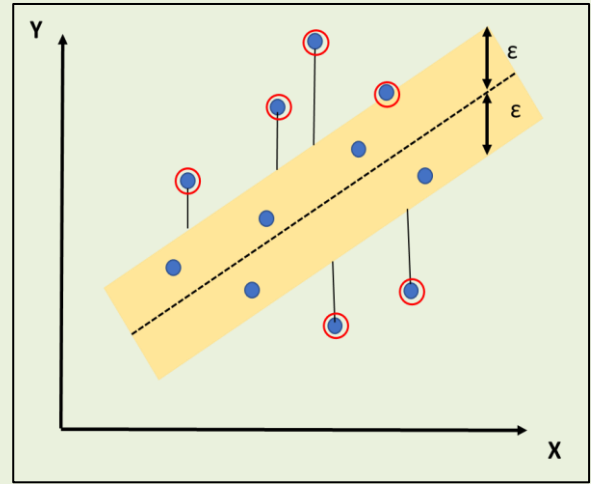**All are cordially invited.**

Coordinator (General Seminar)   Head of the Department

Agenda

Time	Event	Name	Designation
10. 00 am	குறள் வணக்கம்	Ms. Mirudhula K	II M. Sc., (Physics)
10. 05 am	Biography of Scientists	Ms. Karthika P	I M.Sc., (Physics)
10. 10 am	Recent Physics News	Ms. Swetha N J	II M. Sc., (Physics)
10. 15 am	Seminar	Ms. Madhumitha Shree	Research scholar (Ist yr), Nuclear Theory Lab
10. 45 am	பாரதியின் குரல்	Mr. Vignesh K	I M.Sc., (Physics)

^{232}Th (n, 2n)^{231}Th Cross-section

ML - Support Vector Regression

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Tea & Snacks at 11.00 am