



Module PMRF-ISSS048/III/2024

## NUCLEAR PHYSICS & INTRODUCTION TO PARTICLE PHYSICS

Name of the PMRF student

**SUBHADIP SAHA**

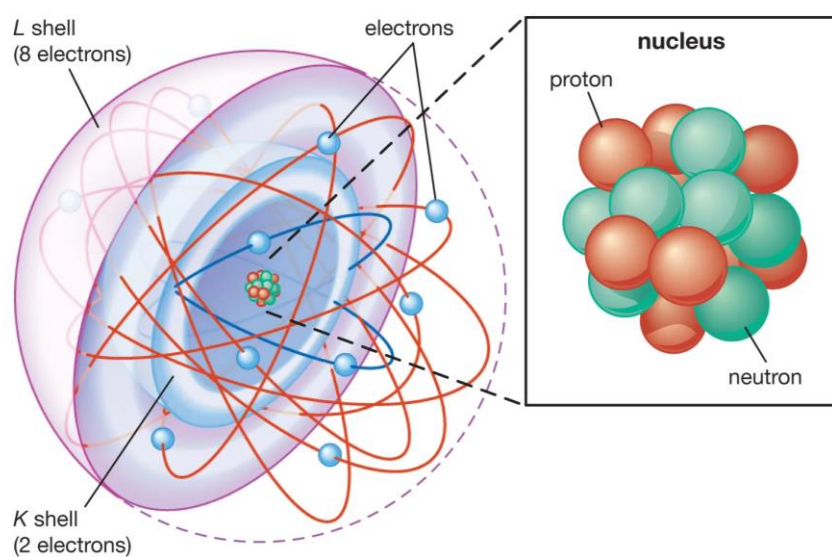
Required background of the students taught

B.Sc., B.S., B.Tech., M.Sc, M.S., M.Tech.

Pre-requisite: Solution of Schrodinger equation in Atomic Physics and Atomic Levels, Angular Momenta and Parity.

Details of the content of the module

1. Charge Distribution inside the nucleus and form factor.
2. Nuclear Structure & General Properties of Nuclei.
3. Mass Defect, Packing Fraction and Binding Energy.
4. Nuclear Stability, Liquid Drop model, Mass Parabolas & Semi-empirical Binding Energy Formula.
5. Nuclear Shell Structure & Nuclear Spin.
6. Nuclear Reaction, Cross-section, Partial Wave Decomposition, Energetics of Nuclear Reactions.
7. Alpha Decay & Beta Decay.
8. Nuclear Fission & Nuclear Fusion.
9. G.M. counter & Cyclotron.
10. Elementary Particles – In Details.



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Schedule of the module

Wednesday: 15:00 to 16:30

Friday: 15:00 to 16:30 (could be optional)

Duration: 20<sup>TH</sup> March, 2024 to November 2024

Total Course Duration: 50 Hours (including problem solving sessions)

Meeting link : Will be shared later

Contact email ID: [iss.forum@gmail.com](mailto:iss.forum@gmail.com)

Registration link:

<https://forms.gle/P4Ksuwr5mQmea9KT9>