

Advanced Nuclear Physics

✓ Nuclear Properties

- Introduction
- Nucleon Structure
- Nuclear Map
- Charge and Matter Distribution
- Radii and Shape
- Mass and Binding Energy
- Separation Energy
- Angular Moment and Parity
- Electromagnetic Moment
- Isospin
- Excited States and Level Density

✓ Liquid Drop Model

- Liquid drop model
- Nuclear Stability
- Semi-empirical Mass
- Droplet Model

✓ Shell Model

- Single Particle Shell Model
- Mean Field Nuclear Potentials
- Deuteron Nuclei
- Many Particle Shell Model

✓ Fermi Gas Model

- Fermi gas model
- Nuclear Symmetry Potential

✓ **Collective Model**

- Nuclear Rotation
- Nuclear Vibration

✓ **Radioactive Decay**

- Radioactive Decay law
- Types of Decays
- Units for Measuring Radiation

✓ **Alpha Decay**

- Basic Alpha Decay Processes
- Alpha Decay Systematics
- Theory of Alpha Decay

✓ **Beta Decay**

- Basic Beta Decay Processes
- Theory of Beta Decay

✓ **Gamma Decay**

- Basic Gamma Decay Processes
 - Theory of Gamma Decay
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