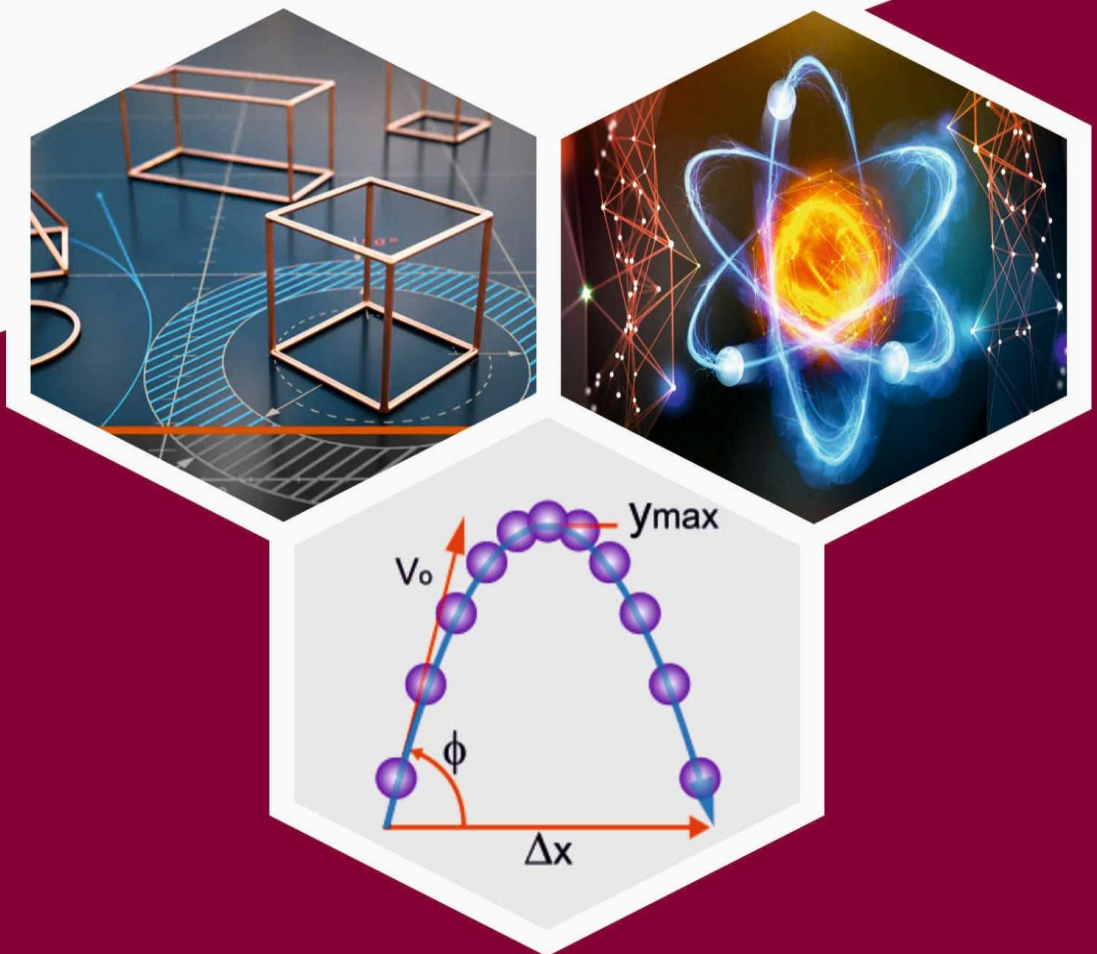
Introduction to Mathematical Physics and Classical Mechanics

For B. Sc. Sem I (Major and Minor Courses)
Based on NEP 2020 (for all Universities of Bihar)
Under Choice Based Credit System (CBSCS)

Dr. Ajay K. Thakur



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PREFACE

Introduction to Mathematical Physics & Classical Mechanics for B. Sc. Sem I (Major and Minor Courses) Based on NEP 2020 (for all Universities of Bihar) Under Choice Based Credit System (CBSCS). This textbook is designed for students in the first semester of the Bihar B.Sc. programme, with a concentration on Mathematical Physics and Classical Mechanics. Its goal is to provide a firm foundation in mathematical tools needed to interpret and analyse physical processes, as well as an introduction to classical mechanics principles.

Classical dynamics, as a limit theory of quantum mechanics, encompasses a wide range of phenomena, from computable (integrable) to chaotic (mixing) behaviour. The KAM (Kolmogorov-Arnold-Moser) theory and asymptotic completeness in classical scattering are presented in this book. It includes a wealth of fascinating physics examples and provides not only an excellent selection of basic topics, but also an introduction to a number of current areas of research in classical mechanics. Thanks to the instructional structure and short appendices, the presentation is self-contained and requires just knowledge of the basic courses in mathematics.

Abbreviations

- Augmented Satellite Launch Vehicle (ASLV)
- Center of Mass (COM)
- Computational Fluid Dynamics (CFD)
- Geostationary Satellite Launch Vehicle (GSLV)
- Global Positioning System (GPS)
- Indian Space Research Organization (ISRO)
- Intercontinental Ballistic Missile (ICBM)
- Mars Global Surveyor (MGS)
- Polar Satellite Launch Vehicle (PSLV)
- Radio Telescope (GMRT)
- Satellite Launch Vehicle (SLV)
- Tata Institute of Fundamental Research (TIFR)

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