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Classical Dynamics: A Contemporary Approach





Synopsis

Recent advances in the study of dynamical systems have revolutionized the way that classical mechanics is taught and understood. This new and comprehensive textbook provides a complete description of this fundamental branch of physics. The authors cover all the material that one would expect to find in a standard graduate course: Lagrangian and Hamiltonian dynamics, canonical transformations, the Hamilton-Jacobi equation, perturbation methods, and rigid bodies. They also deal with more advanced topics such as the relativistic Kepler problem, Liouville and Darboux theorems, and inverse and chaotic scattering. A key feature of the book is the early introduction of geometric (differential manifold) ideas, as well as detailed treatment of topics in nonlinear dynamics (such as the KAM theorem) and continuum dynamics (including solitons). Over 200 homework exercises are included. It will be an ideal textbook for graduate students of physics, applied mathematics, theoretical chemistry, and engineering, as well as a useful reference for researchers in these fields. A solutions manual is available exclusively for instructors.

Book Information

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Customer Reviews

This book is, to say the least, okay. Yes, other reviewers are right when they say it's much better than Marion & Thornton. But Marion & Thornton, I think, is geared toward a less sophisticated audience, whereas this book is geared toward graduate students and beyond. It is written essentially at the level of Goldstein, but offers more insights into Topology. Goldstein hardly mentions topology.So, because of this, one would think that Jose and Saletan would be better suited for students of theoretical and mathematical physics. But it's not. Jose and Saletan's

excursions into geometry and topology are mediocre, at best. They leave out enough details that a real book on differential topology for physicists is required to gain any insight or intuition on the subject. Their transitions from pure physics to these mathematical subjects are clumsy and contrived, and they do not reveal anything that's too much more profound than if they hadn't brought up the subject at all.And in comparing, on a purely physical level, this book to the book that sets the standard for classical mechanics, Goldstein, Jose pales in comparision. Goldstein keeps the reader fixed on a physical goal, but Jose and Saletan introduce unnecessarily complicated notation at times, and introduce ideas and concepts in a way that seems to defy logic.And on top of all this, the paperback edition fell apart on me after less than a month of use. Some of the other students in my class who weren't as careful with their books as used them more heavily could even make it last 2 weeks before the pages were falling out of the cover.

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