

Classical Mechanics (Physics)

By J. Michael Finn



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This book presents an updated treatment of the dynamics of particles and particle systems suitable for students preparing for advanced study of physics and closely related fields, such as astronomy and the applied engineering sciences. Compared to older books on this subject, the mathematical treatment has been updated for the study of more advanced topics in quantum mechanics, statistical mechanics, and nonlinear and orbital mechanics. The text begins with a review of the principles of classical Newtonian dynamics of particles and particle systems and proceeds to show how these principles are modified and extended by developments in the field. The text ends with the unification of space and time given by the Special Theory of Relativity. In addition, Hamiltonian dynamics and the concept of phase space are introduced early on. This allows integration of the concepts of chaos and other nonlinear effects into the main flow of the text. The role of symmetries and the underlying geometric structure of space-time is a key theme. In the latter chapters, the connection between classical and quantum mechanics is examined in some detail.



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Editorial Review

About the Author

J. Michael Finn (Ph.D.) is a professor of physics at William & Mary College. He is the co-author of numerous peer-reviewed papers in nuclear and particle physics journals, primarily in Physical Review Letters, Physical Review C and D, Nuclear Physics, and Nuclear Instruments and Methods.

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