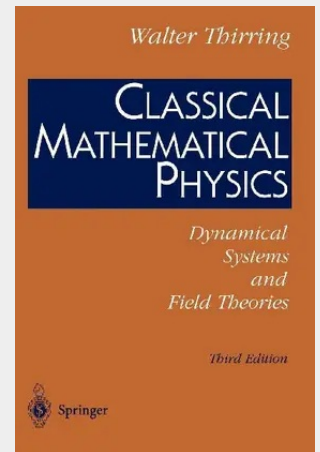


Classical Mathematical Physics

Dynamical Systems and Field Theories

This volume combines the enlarged and corrected editions of both volumes on classical physics of Thirring's famous course in mathematical physics. With numerous examples and remarks accompanying the text, it is suitable as a textbook for students in physics, mathematics, and applied mathematics. The treatment of classical dynamical systems uses analysis on manifolds to provide the mathematical setting for discussions of Hamiltonian systems, canonical transformations, constants of motion, and perturbation theory. Problems discussed in considerable detail include: nonrelativistic motion of particles and systems, relativistic motion in electromagnetic and gravitational fields, and the structure of black holes. The treatment of classical fields uses the language of differential geometry throughout, treating both Maxwell's and Einstein's equations in a compact and clear fashion. The book includes discussions of the electromagnetic field due to known charge distributions and in the presence of conductors as well as a new section on gauge theories. It discusses the solutions of the Einstein equations for maximally symmetric spaces and spaces with maximally symmetric submanifolds; it concludes by applying these results to the life and death of stars.

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