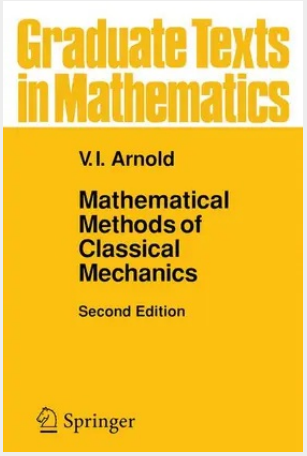
Arnol'd

Mathematical Methods of Classical Mechanics

In this text, the author constructs the mathematical apparatus of classical mechanics from the beginning, examining all the basic problems in dynamics, including the theory of oscillations, the theory of rigid body motion, and the Hamiltonian formalism. This modern approch, based on the theory of the geometry of manifolds, distinguishes iteself from the traditional approach of standard textbooks. Geometrical considerations are emphasized throughout and include phase spaces and flows, vector fields, and Lie groups. The work includes a detailed discussion of qualitative methods of the theory of dynamical systems and of asymptotic methods like perturbation techniques, averaging, and adiabatic invariance.

This text begins with the basic facts of classical mechanics and proceeds to examine many important questions in dynamics. This modern approach, based on the theory of the geometry of manifolds, distinguishes itself from the traditional approach of standard textbooks. Geometrical considerations are emphasized throughout.



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