

1. Record Nr.	UNINA9910971118103321
Autore	Greene Ronald L.
Titolo	Classical Mechanics with Maple / / by Ronald L. Greene
Pubbl/distr/stampa	New York, NY : , : Springer New York : , : Imprint : Springer, , 1995
ISBN	1-4612-4236-3
Edizione	[1st ed. 1995.]
Descrizione fisica	1 online resource (X, 174 p. 17 illus.)
Disciplina	530/.078
Soggetti	Quantum theory Spintronics Quantum Physics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Bibliographic Level Mode of Issuance: Monograph
Nota di bibliografia	Includes bibliographical references (pages [167]-168) and index.
Nota di contenuto	1 Introduction to Maple V -- 1.1 Basics -- 1.2 Algebraic Equations -- 1.3 Calculus and Differential Equations -- 1.4 Simplification and Manipulation of Results -- 1.5 Extending the Power of Maple -- 1.6 Graphics -- 1.7 Problems -- 2 Review of Introductory Mechanics -- 2.1 Kinematics in Rectangular Coordinate Systems -- 2.2 Newton's Laws of Motion -- 2.3 Examples of Motion Under Constant Forces -- 2.4 Conservation of Mechanical Energy -- 2.5 Momentum Conservation -- 2.6 Problems -- 3 Newtonian Dynamics of Particles -- 3.1 Kinematics in Other Coordinate Systems -- 3.2 Explicitly Time-Dependent Forces -- 3.3 Position- or Velocity-Dependent Forces -- 3.4 Work and Energy -- 3.5 Power -- 3.6 Angular Momentum and Torque -- 3.7 Central Forces -- 3.8 Problems -- 4 The Harmonic Oscillator -- 4.1 Linear Restoring Force -- 4.2 Simple Harmonic Motion -- 4.3 Damped Harmonic Motion -- 4.4 Sinusoidally-Driven Harmonic Motion -- 4.5 Impulse-Driven Harmonic Oscillator -- 4.6 Approximate Simple Harmonic Motion -- 4.7 Problems -- 5 Systems of Particles -- 5.1 The Two-Body Problem -- 5.2 The N-Body Problem -- 5.3 Simple Rigid Body Motion -- 5.4 Equilibrium of a Rigid Body -- 5.5 Coupled Harmonic Oscillators -- 5.6 Problems -- References.
Sommario/riassunto	Many problems in classical mechanics can now be readily solved using computers. This text integrates Maple, a general-purpose symbolic computation program, into the traditional sophomore- or junior-level

mechanics course. Intended primarily as a supplement to a standard text, it discusses all the topics usually covered in the course and shows how to solve problems using Maple and how to display solutions graphically to gain further insight. The text is self-contained and can also be used for self-study or as the primary text in a mechanics course.
