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Soggetti	Atoms Physics Astrophysics Plasma (Ionized gases) Energy systems Lasers Photonics Atoms and Molecules in Strong Fields, Laser Matter Interaction Astrophysics and Astroparticles Plasma Physics Energy Systems Optics, Lasers, Photonics, Optical Devices
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Nota di contenuto	Introduction to High-Energy-Density Physics -- Descriptions of Fluids and Plasmas -- Properties of High-Energy-Density Plasmas -- Shocks and Rarefactions -- Hydrodynamic Instabilities -- Radiative Transfer -- Radiation Hydrodynamics -- Creating High-Energy-Density Conditions -- Inertial Confinement Fusion -- Experimental Astrophysics -- Relativistic High-Energy-Density Systems -- Appendix A: Constants, Acronyms, and Standard Variables -- Appendix B: Sample Mathematica Code -- Appendix C: List of the Homework Problems and Solutions to Selected Problems.
Sommario/riassunto	The raw numbers of high-energy-density physics are amazing: shock

waves at hundreds of km/s (approaching a million km per hour), temperatures of millions of degrees, and pressures that exceed 100 million atmospheres. This title surveys the production of high-energy-density conditions, the fundamental plasma and hydrodynamic models that can describe them and the problem of scaling from the laboratory to the cosmos. Connections to astrophysics are discussed throughout. The book is intended to support coursework in high-energy-density physics, to meet the needs of new researchers in this field, and also to serve as a useful reference on the fundamentals. Specifically the book has been designed to enable academics in physics, astrophysics, applied physics and engineering departments to provide in a single-course, an introduction to fluid mechanics and radiative transfer, with dramatic applications in the field of high-energy-density systems. This second edition includes pedagogic improvements to the presentation throughout and additional material on equations of state, heat waves, and ionization fronts, as well as problem sets accompanied by solutions.