1. Record Nr. UNINA9910818581903321

Autore	Padmanabhan T (Thanu), <1957->
Titolo	An invitation to astrophysics / / Thanu Padmanabhan
Pubbl/distr/stampa	Hackensack, N.J., : World Scientific, c2006
ISBN	1-281-91943-8 9786611919436 981-277-437-8
Edizione	[1st ed.]
Descrizione fisica	1 online resource (383 p.)
Collana	World Scientific series in astronomy and astrophysics ; ; v. 8
Disciplina	523.01
Soggetti	Astrophysics Cosmology
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references (p. 353-355) and index.
Nota di contenuto	Contents ; Preface ; Prologue ; 1 Gravitation ; 1.1 Orbits in Newtonian gravity ; 1.2 Precession and tides ; 1.3 Virial theorem ; 1.4 Gravitational collisions and relaxation ; 1.5 Relativistic gravity ; 1.6 Gravitational lensing ; 2 Radiative Processes 2.1 The origin of radiation 2.1.1 Radiation in classical theory ; 2.1.2 Radiation in quantum theory ; 2.2 Thermal radiation ; 2.3 Monochromatic plane wave ; 2.4 Astrophysical radiative processes ; 2.4.1 Thermal bremsstrahlung ; 2.4.2 Synchrotron radiation 2.4.3 Inverse Compton scattering 2.5 Radiative processes in quantum theory ; 2.5.1 Energy levels ; 2.5.2 Transition rates and cross sections ; 2.5.3 Ionisation and recombination ; 2.5.4 Spectral line profiles ; 3 Matter ; 3.1 Equations of state 3.2 Self-gravitating barotropic fluids 3.3 Flows of matter ; 3.3.1 Spherical accretion

; 3.3.2 Accretion disks ; 3.3.3 Shock waves and explosions ; 3.3.4 Turbulence ; 3.4 Basic plasma physics ; 3.4.1 Ionisation equilibrium of plasma ; 3.4.2 Electromagnetic fields in plasma 4 Stars and Stellar Evolution 4.1 When is gravity important? ; 4.2 Stellar magnitudes and colours ; 4.3 Modeling stellar structure ; 4.4 The Sun as a star ; 4.5 Overview of stellar evolution ; 4.5.1 Formation of a main sequence star ; 4.5.2 Life history of a star ; 5 Relics of Stars 5.1 Supernova remnants

Sommario/riassunto

This unique book provides a clear and lucid description of several aspects of astrophysics and cosmology in a language understandable to a physicist or beginner in astrophysics. It presents the key topics in all branches of astrophysics and cosmology in a simple and concise language. The emphasis is on currently active research areas and exciting new frontiers rather than on more pedantic topics. Many complicated results are introduced with simple, novel derivations which strengthen the conceptual understanding of the subject. The book also contains over one hundred exercises which will help