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Nota di contenuto

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2.3 Cosmic Background Radiation2.4 Integrated Radiation Field; 2.5 Radiative Transfer; 2.5.1 Radiative Transfer Equation; 2.5.2 Transfer Equation Solution; 2.5.3 Numerical Example: Energy Density; 2.6 High-Energy Radiation; Exercises; Bibliography; Chapter 3: Spectral Line Formation; 3.1 Introduction; 3.2 Thermodynamic Equilibrium Equations; 3.2.1 Maxwellian Velocity Distribution Function; 3.2.2 Boltzmann Equation; 3.2.3 Saha Equation; 3.2.4 The Planck Function; 3.3 Radiative Transfer; 3.4 Einstein Coefficients; 3.4.1 Emission Coefficient; 3.4.2 Absorption Coefficient
3.4.3 Relations Between the Einstein Coefficients3.5 Spectral Line Profile; 3.5.1 Absorption Line Profile; 3.5.2 Doppler Profile; 3.5.3 Lorentz Profile; 3.5.4 Voigt Profile; 3.5.5 Integrated Absorption Cross Section; 3.5.6 Relations Between the Einstein Coefficients and the Oscillator Strength; 3.5.7 Induced Emissions; 3.6 The Source Function; Exercises; Bibliography; Chapter 4: Interstellar Emission and Absorption Lines; 4.1 Introduction; 4.2 Optical Recombination Lines; 4.2.1 Recombination Coefficient; 4.2.2 Recombination Line Analysis; 4.2.3 Results; 4.3 The H 21cm Emission Line
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5.5.1 Deviation Coefficients

Sommario/riassunto

The space between the stars includes a large variety of objects, where physical processes occur that are fundamental for the structure and evolution of galaxies. This book gives the reader some basic knowledge of these processes and at the same time, presents estimates of the main quantities relevant to the study of the interstellar medium. The book could be used as an introductory course on the interstellar medium by science students or by readers interested in astrophysics with an adequate physics and mathematics background.