1. Record Nr. UNINA9910480408403321 Autore Hansen Carl J Titolo Stellar Interiors [[electronic resource]]: Physical Principles, Structure, and Evolution / / by Carl J. Hansen, Steven D Kawaler New York, NY:,: Springer New York:,: Imprint: Springer,, 1994 Pubbl/distr/stampa **ISBN** 1-4684-0214-5 Edizione [1st ed. 1994.] Descrizione fisica 1 online resource (XIV, 446 p.) Collana Astronomy and Astrophysics Library, , 0941-7834 Disciplina 520 Soggetti Observations, Astronomical Astronomy—Observations **Astrophysics** Geophysics Astronomy, Observations and Techniques Astrophysics and Astroparticles Geophysics/Geodesy 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 and index. Nota di contenuto 1 Preliminaries -- 1.1 Hydrostatic Equilibrium -- 1.2 An Energy Principle -- 1.3 The Virial Theorem and Its Applications -- 1.4 The Constant-Density Model -- 1.5 Energy Generation and Transport -- 1.6 Stellar Dimensional Analysis -- 1.7 Evolutionary Lifetimes on the Main Sequence -- 1.8 Exercises -- 1.9 References and Suggested Readings -- 2 An Overview of Stellar Evolution -- 2.1 Pre-Main Sequence Evolution -- 2.2 Single Stars On and Near the Main Sequence -- 2.3 Evolution of Single Stars Off the Main Sequence -- 2.4 Late Stages of Evolution -- 2.5 Evolution in Close Binary Systems -- 2.6 Special Kinds of Stars -- 2.7 Concluding Remarks -- 2.8 Exercises -- 2.9 References and Suggested Readings -- 3 Equations of State -- 3.1 Distribution Functions -- 3.2 Blackbody Radiation -- 3.3 Ideal Monatomic Gas --3.4 The Saha Equation -- 3.5 Fermi-Dirac Equations of State -- 3.6 "Almost Perfect" Equations of State -- 3.7 Adiabatic Exponents and Other Derivatives -- 3.8 Exercises -- 3.9 References and Suggested

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Sommario/riassunto

That trees should have been cut down to provide paper for this book was an ecological affront. From a book review. - Anthony Blond (in the Spectator, 1983) The first modern text on our subject, Structure and Evolution of the Stars, was published over thirty years ago. In it, Martin Schwarzschild described numerical experiments that successfully reproduced most of the observed properties of the majority of stars seen in the sky. He also set the standard for a lucid description of the physics of stellar interiors. Ten years later, in 1968, John P. Cox's tw~volume monograph Principles of Stellar Structure appeared, as did the more specialized text Principles of Stellar Evolution and Nuc1eosynthesis by Donald D. Clayton-and what a difference ten years had made. The field had matured into the basic form that it remains today. The past twenty-plus years have seen this branch of astrophysics flourish and develop into a fundamental pillar of modern astrophysics that addresses an enormous variety of phenomena. In view of this it might seem foolish to offer another text of finite length and expect it to cover any more than a fraction of what should be discussed to make it a thorough and self-contained reference. Well, it doesn't. Our specific aim is to introduce only the fundamentals of stellar astrophysics. You will find little reference here to black holes, millisecond pulsars, and other "sexy" objects.