

The study of stellar dynamics is experiencing an exciting new wave of interest thanks to observational campaigns and the ready availability of powerful computers. While its relevance includes many areas of astrophysics, from the structure of the Milky Way to dark matter halos, few texts are suited to advanced students. This volume provides a broad overview of the key concepts beyond the elementary level, bridging the gap between the standard texts and specialist literature. The author reviews Newtonian gravity in depth before examining the dynamical properties of collisional and collisionless stellar-dynamical systems that result from gravitational interactions. Guided examples and exercises ensure a thorough grounding in the mathematics, while discussions of important practical applications give a complete picture of the subject. Readers are given a sound working knowledge of the fundamental ideas and techniques employed in the field and the conceptual background needed to progress to more advanced graduate-level treatises.

**Luca Ciotti** is Professor of Astronomy and Astrophysics at the University of Bologna, where he has also served for many years as Director of the Collegio Superiore. Since 1992, he has been a long-term visitor of the Princeton University Observatory. His work developed in several fields of theoretical astrophysics, with main interests in stellar dynamics, fluid dynamics, and black hole accretion. This is his second book in the field, having previously written *Lecture Notes on Stellar Dynamics* based on the lectures given at the Scuola Normale Superiore in Pisa.

Cover image: The globular cluster NGC 1898 in the Large Magellanic Cloud, observed with Hubble's Advanced Camera for Surveys (ACS) and Wide Field Camera 3 (WFC3), a natural laboratory for Stellar Dynamics. Each star in the image moves under action of the total gravitational field produced by the others, and of the tidal field produced by the host galaxy. The combined effect of gravity and stellar evolution drive the evolution of this magnificent stellar system. Credit: ESA/Hubble & NASA

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