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Descrizione fisica	1 online resource (VII, 241 p. 79 illus., 54 illus. in color.)
Collana	CISM International Centre for Mechanical Sciences, Courses and Lectures, , 0254-1971 ; ; 595
Disciplina	620.1064 523.01
Soggetti	Fluid mechanics Fluids Geophysics Atmospheric sciences Planetary science Engineering Fluid Dynamics Fluid- and Aerodynamics Geophysics/Geodesy Atmospheric Sciences Planetary Sciences
Lingua di pubblicazione	Inglese
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Livello bibliografico	Monografia
Nota di contenuto	Internal Waves and Tides in Stars and Giant Planets -- Waves & Convection in Stellar Astrophysics -- Internal Waves in the Atmosphere and Ocean: Instability Mechanisms -- Rotational Dynamics of Planetary Cores: Instabilities Driven by Precession, Libration and Tides -- Fluid Dynamics of Earth's Core: Geodynamo, Inner Core Dynamics, Core Formation -- A Brief Introduction to Turbulence in Rotating and Stratified Fluids.
Sommario/riassunto	This book explores the dynamics of planetary and stellar fluid layers, including atmospheres, oceans, iron cores, and convective and radiative zones in stars, describing the different theoretical, computational and experimental methods used to study these problems in fluid

mechanics, including the advantages and limitations of each method for different problems. This scientific domain is by nature interdisciplinary and multi-method, but while much effort has been devoted to solving open questions within the various fields of mechanics, applied mathematics, physics, earth sciences and astrophysics, and while much progress has been made within each domain using theoretical, numerical and experimental approaches, cross-fertilizations have remained marginal. Going beyond the state of the art, the book provides readers with a global introduction and an up-to-date overview of relevant studies, fully addressing the wide range of disciplines and methods involved. The content builds on the CISM course “Fluid mechanics of planets and stars”, held in April 2018, which was part of the research project FLUDYCO, supported by the European Research Council (ERC) under the European Union's Horizon 2020 research and innovation program.

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