



Astrophysics of the Interstellar Medium [

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Springer International Publishing :

Imprint: Springer,

2021.

Monografía

This book is based on a series of lectures for an Astrophysics of the Interstellar Medium (ISM) master's degree in Astrophysics and Cosmology at Padova University. From the cold molecular phase in which stars and planetary systems form, to the very hot coronal gas that surrounds galaxies and galaxy clusters, the ISM is everywhere. Studying its properties is vital for the exploration of virtually any field in astronomy and cosmology. These notes give the student a coherent and accurate mathematical and physical approach, with continuous references to the real ISM in galaxies. The book is divided into three parts. Part One introduces the equations of fluid dynamics for a system at rest and acoustic waves, and then explores the real ISM through the role of thermal conduction and viscosity, concluding with a discussion of shock waves and turbulence. In Part Two, the electromagnetic field is switched on and its role in modulating shock waves and contrasting gravity is studied. Part Three describes dust and its properties, followed by the main stellar sources of energy. The last two chapters respectively address the various components of the ISM and molecular clouds and star formation.

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Título: Astrophysics of the Interstellar Medium electronic resource] by Giovanni Carraro.

Edición: 1st ed. 2021

Editorial: Cham Springer International Publishing Imprint: Springer 2021.

Descripción física: XI, 356 p. 55 illus., 16 illus. in color. online resource.

Mención de serie: UNITEXT for Physics 2198-7882

Documento fuente: Springer Nature eBook

Contenido: Fundamental equations for ideal fluids -- Acoustic waves -- Real fluids -- The interstellar medium -- Shock waves -- Turbulence -- Electrodynamics and magnetohydrodynamics -- Motion of a plasma in a magnetic field -- Magnetohydrodynamic waves -- Dust from the interstellar medium -- HII regions -- Stellar Winds -- Supernovae remnants -- The interstellar medium and its components -- Molecular Clouds -- Star formation.

ISBN: 9783030752934 978-3-030-75293-4

Materia: Materials science Acoustics Optics Electrodynamics Plasma (Ionized gases) Materials Science, general
Acoustics Classical Electrodynamics Plasma Physics

Entidades: SpringerLink (Online service)

Enlace a formato físico adicional: Printed edition 9783030752927 Printed edition 9783030752941 Printed edition
9783030752958

Punto acceso adicional serie-Título: UNITEXT for Physics 2198-7882.

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