

The ISM of galaxies

Introduction to the ISM of galaxies

General introduction with an overview of the different phases and components of the ISM, the various heating sources, and the lifecycle of the ISM.

Based on chapter 1

HII regions and PDRs

The radiative interaction of massive stars with their environment.

A discussion of the ionization and thermal structure of HII regions and their observational characteristics.

A discussion of the thermal structure and molecular composition of PhotoDissociation Regions and their observational signatures.

Based on chapters 7 & 9

Interstellar dust and PAHs

Discussion of the observational characteristics of interstellar dust and the derived properties (composition and sizes).

The temperature of interstellar dust and the IR emission spectrum.

Discussion of the observational characteristics of interstellar PAHs and the derived properties (molecular structure and sizes).

Discussion of the difference between large molecules and small grains, including canonical and microcanonical ensembles.

Based on chapters 5 & 6,

The phases of the ISM

The ISM in thermal and pressure equilibrium.

The mechanical interaction of stellar winds and supernova explosions with their environment and their role in the lifecycle of the ISM of galaxies.

Orion as a case study.

The Large Magelanic Cloud as a case study.

Based upon Chapters 7 & 12.

Literature: The physics and chemistry of the ISM, AG.G.M. Tielens, 2005,
(Cambridge University Press)