



The physics and chemistry of the Interstellar Medium

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The ISM is one of the most beautiful components of a galaxy, and it plays a fundamental role as both the fuel for star formation and the end point of the material expelled by dying stars. It exists in a variety of ionization states, temperatures, and pressures.

In the first part of this lecture, I will introduce the main components and 'phases' of the ISM, along with their dominant heating and cooling mechanisms. In the second part, I will explain how atomic and molecular lines have become key tracers of the ISM. I will also provide a basic introduction to their formation, destruction, excitation, and radiative transfer mechanisms, as well as to gas line diagnostics and commonly used models.

Bibliography

- *The Physics and Chemistry of the ISM*, A. G. G. M. Tielens, Cambridge University Press, 2005.
- *Physics of the Interstellar and Intergalactic Medium*, B. Draine, Princeton University Press, 2011.
- *Interstellar Chemistry*, W. W. Duley and D. A. Williams, Academic Press, 1984.