

NEBULATOM A capacity development workshop for Latin American astronomers on emission-line objects in the Universe.

Sunday 03 March 2013 - Saturday 16 March 2013

Scientific Programme

Nebulae and galaxies

Introduction to ionized nebulae and their spectra. Physical mechanisms occurring in ionized nebulae. Plasma diagnostics in the optical, UV, IR and X-rays. Methods of abundance determinations. How to compare abundances at various redshifts. The unsolved problem of temperature fluctuations and its impact on abundance determinations. Determination of effective temperatures and star formation rates. How to identify the excitation source (massive stars, active nuclei, shocks) from an emission line spectrum. How to construct and use photoionization models. Dust in ionized nebulae.

Atomic data

Atomic physics for ionized nebulae: a practical introduction. Importance of atomic data and how to extrapolate them.

Can we estimate the reliability of atomic data? Atomic databases and virtual data centers (VAMDC).

Practical sessions

How to look at observational data. Introduction to the PYNEB and ABELION codes. Plasma diagnostics. Abundance determinations. Introduction to the CLOUDY (PYCLOUDY) and XSTAR photoionization codes.

Understanding the results of a photoionization model. Construction and use of model grids. Tailored-model fitting with a large number of constraints. Modelling line profiles with PYCLOUDY.