Title:
Physical properties and metallicities in Star-Forming Regions: observational determinations.

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Abstract:
The large amount of massive stars belonging to regions with violent star formation dominates the gas morphology, the evolution of the different generations of stars and the physical conditions of the material that surrounds them through the photoionization of the gas (regions of ionized hydrogen), strong stellar winds, formation of super-bubbles and flows of material. The analysis of these processes between a burst of star formation and its surroundings requires the complete study of the gaseous component, from its kinematic structure to its physical properties. In the present talk we will present different methods to derive the physical properties of the gas: electronic densities and temperatures, chemical abundances and degree of ionization in different environments, from metal rich regions (giant and circumnuclear regions) to HII galaxies and Green Peas, and galaxies with Active Galactic Nuclei (AGNs). Furthermore, we will show some of the results obtained by our group using models, high spectral resolution spectrographs and integral field spectroscopy.