

Poster: Ionized and molecular regions toward ATLASGAL dust clumps

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HII regions are an excellent tracer of high-mass star-forming regions and current star formation in galaxies. In particular, young O/B stars produce powerful outflows and intense UV radiation that appreciably change the chemistry and physical conditions in the surrounding HII regions. To characterize the properties of ionized gas and study its association with the surrounding molecular gas, we analyzed (sub)millimeter hydrogen radio recombination lines (RRLs) and several molecular lines toward a large sample of 967 compact dust clumps from the APEX Telescope Large Area Survey of the Galaxy (ATLASGAL). This sample represents various molecular environments and different evolutionary stages of massive star formation. The analyzed data obtained from molecular line surveys with several single-dish telescopes provide the largest sample of mm-RRLs published to date. RRL profiles of some sources indicate evidence of high-velocity ionized gas and provide candidates to study the detailed the dynamics and structures of the ionized gas. By comparing the column densities and abundances of the selected molecules in dust clumps, the different trend was found between the molecules. This allows us to investigate the influences of O/B stars on the chemistry and physics of dust clumps.

Galactic Scale