

ATLASGAL: Link between Galactic Dynamics and Star Formation

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Star formation is a localised phenomenon that takes place in the densest parts of giant molecular clouds (GMCs). The strong correlation between star-forming regions and the spiral arms observed in studies of nearby spiral galaxies points to a strong connection between the large-scale dynamics of a galaxy and the star formation taking place on smaller scales. This has led to the view of galaxies being engines of star formation. Understanding the processes of star formation is a primary goal for astrophysics and to accomplish this we need to take a global approach that looks at the connection between large-scale structure (i.e. spiral arms, the Galactic bar and Galactic Supershells; 1-10s kpc), giant molecular filaments (100-500 pc), GMCs (30-100 pc), and the dense star-forming clumps (~ 1 pc), which is the fundamental star-forming unit. We combine a well-characterised sample of dense star-forming clumps identified by the ATLASGAL survey with a number of high-resolution CO surveys to link the star formation with the large-scale structures. In this talk, we present an overview of the project and discuss the star formation properties as a function of physical scale, environment and Galactic location.

Galactic Scale