Thesis subject

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Subject's title: High-mass stars' feedback impact on star formation properties

Subject description:
High-mass (M_{Star} > 8 M_{Sun}) stars impact the surrounding interstellar medium and affect star formation. This impact can be either positive (triggering star formation by collecting the gas) or negative (quenching star formation by pushing the gas away).
In our Galaxy, the wealth of existing data describes star formation on milli to kilo parsec scales, allowing to build a complete view of the star formation process, including the impact of the environment on star formation properties. In external galaxies, high-resolution observations describe the star formation process on ~ few tens pc scales, showing that the Kennicutt-Schmidt relation does not hold any more on scales < 200 pc.
The aim of this PhD is to characterize the impact of high-mass stars on their surroundings, in particular on the way high-mass stars impact the star formation properties (star formation rate (SFR), star formation efficiency (SFE)). I propose to use available data and state-of-the art models (from dedicated SILICC simulations) to study this impact in the Galaxy where star formation is observed on spatial scales spanning 6 orders of magnitude and sampling a wide range of physical environments (from quiescent to highly turbulent regions). Combination of observations and modelling will allow to extract a clear knowledge on the impact of high-mass stars on star formation properties. Of particular interest for galaxy evolution models, the time evolution of the radiative feedback impact on star formation properties will be scrutinized in this PhD study.
The results obtained in the Galaxy will be compared to star formation properties observed in external galaxies (using available data), bridging the gap between galactic and extragalactic star formation.

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