The importance of high angular resolution to understand massive star formation

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Résumé

Massive stars are the main agent to the physical, chemical and dynamic evolution of galaxies. But how they form is not yet understood. To understand the mechamisms leading to their formation it is crucial to observe them in their very earliest stage of evolution and to characteirse their physical properties (density, mass, temperature, luminosity) and to obtain a global view of the cloud where they are forming. It is in this framework that the program Herschel HOBYS (P.I. F. Motte, A. Zavagno, S. Bontemps) has led a census and a systematic study of massive dense cores into nearby (Distance $<$ 3 kpc) star-forming regions based on PACS et SPIRE images made in the five Herschel bandes (70, 160, 250, 350 et 500 microns). The first results obtained by the HOBYS consortium show a strong link between the position of the dense cores and the interstellar filaments. The low mass cores seems to be located along the filaments while the massive proto-stellar clusters appear to form preferentially at the filamentary junctions (ridges). In parrallel, the HII region impact to the star-formation is still to explore. A natural follow up of the massive dense cores in early phase, put in evidence thanks to Herschel is to observe them at high-angular resolution with ALMA/NOEMA in order to characterise their possible fragmentation, to study their chemistry and their kinematics. I will illustrate our goals from the first results we have about NGC6334 and NGC6357, two well known star-forming regions.

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