

Service d'Astrophysique
SÉMINAIRE

Jeudi 17 janvier 11h00

CEA Saclay, Orme des Merisiers Bat 713, salle de séminaires Galilée

**FROM FILAMENTARY NETWORKS TO DENSE
CORES IN MOLECULAR CLOUDS : TOWARD A
UNIFIED PICTURE FOR STAR FORMATION ON
GLOBAL SCALES ?**

Ph. ANDRE

SAP

Star formation is one of the most fundamental, most complex, and least understood processes in astrophysics. Recent studies of the nearest star-forming clouds of the Galaxy at submillimeter wavelengths with the Herschel Space Observatory have provided us with unprecedented images of the initial conditions and early phases of the star formation process.

The Herschel images reveal an intricate network of filamentary structure in every interstellar cloud. These filaments all exhibit remarkably similar central widths - about one tenth of a parsec - but only the densest ones contain prestellar cores, the seeds of future stars. The Herschel results favor a scenario in which interstellar filaments and prestellar cores represent two key steps in the star formation process:

first turbulence stirs up the gas, giving rise to a universal web-like structure in the interstellar medium, then gravity takes over and controls the further fragmentation of filaments into prestellar cores and ultimately protostars. This scenario provides new insight into the inefficiency of star formation, the origin of stellar masses, and the global rate of star formation in galaxies. Despite an apparent complexity, global star formation may be governed by relatively simple universal laws from filament to galactic scales.

Le cafe sera servi 10 minutes avant

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