

P152a Observed properties of interstellar filaments

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The highly filamentary structure of the interstellar medium is now impressively revealed by *Herschel* and *Planck* images tracing the Galactic cold dust emission. Previous observations have shown that clouds are filamentary, however, only recently have interstellar filaments received special attention, thanks to the new observational results on their physical properties.

The analysis of the column density profiles of the filaments derived from *Herschel* images indicates that they all share a common central width of 0.1 pc, while they span a wide range in length, column density, mass per unit length. The results derived from observations tracing cold dust and gas emission, in total and polarised intensity, suggest that filaments can be divided into two families: On the one hand, low column density, unbound, and quiescent filaments mostly aligned with the local magnetic field orientation, and on the other hand, dense, self-gravitating filaments, mostly perpendicular to the local magnetic field orientation, and fragmented into star forming cores. I will present the properties of the filamentary structures derived from *Herschel*, *Planck*, and molecular line observations, and I will discuss the observational constraints on the formation and evolution of interstellar filaments and their key role in the star formation process.