

---

# Puzzling cosmic-ray propagation in nearby magnetised cirri

Isabelle Grenier\*<sup>1</sup> and François Kamal Youssef<sup>1</sup>

<sup>1</sup>AIM – Université Paris Cité, Université Paris-Saclay, CEA, CNRS – France

## Résumé

GeV cosmic rays alter the dynamics of the interstellar medium, but their effective role depends on transport properties that are largely unknown in the different media. Theory suggests order-of-magnitude variations in diffusion length and degree of anisotropy according to the ambient gas and magnetic state. We have compared the gamma-ray emissivity per gas nucleon (hence the cosmic-ray spectrum) in two similar, nearby, cirrus clouds. Both are low-density filaments pointing to the Galactic halo, where dust polarisation indicates relatively well ordered magnetic fields parallel to the filament length. The significant, but puzzling, difference we find in cosmic-ray flux in these two clouds provides an important test case to study cosmic-ray transport in ordered magnetic fields. Future measurements of Alfvénic Mach numbers would greatly help test transport theories.

---

\*Intervenant