

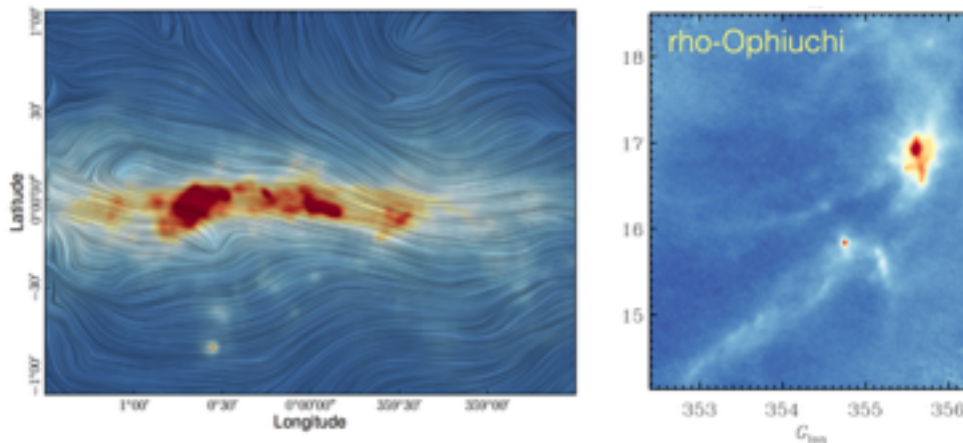
PILOT magnetic field in the Milky Way and Star Forming Regions

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The PILOT balloon-borne instrument is dedicated to measure the linear polarization of the faint interstellar diffuse dust emission in the Far-Infrared in our Galaxy and nearby galaxies. We present dust polarization measurements Galactic regions observed with the PILOT balloon-borne experiment, during its second flight from Alice Springs, Australia in April 2017 ([1]). The Galactic center area was chosen as the first target for PILOT data processing, since it is very bright but very weakly polarized (e.g. [2]), and is therefore a good target to check that the response calibration of the detectors is accurate. We measured the response flat-field using the residual atmospheric emission and the time-variations of the response using the PILOT Internal Calibration Source (ICS). This calibration is accurate at the 3% level. The polarization angles measured toward the Galactic center are consistent with a magnetic field globally aligned with the MW plane, and with angles measured using the Planck satellite at longer wavelengths. We will also present preliminary results obtained towards nearby star forming regions Orion, rho-Ophiuchi and in the Large Magellanic Cloud. The PILOT data will be combined with previous polarization measurements at other frequencies to discuss polarization dust properties.



Right: Preliminary map of the total intensity (color) and magnetic field direction (striations) as derived from polarization PILOT measurements at 240 microns, towards the Galactic center region. Left: Preliminary PILOT total intensity map in Rho-Ophiuchi at 240 microns.

Références

[1] Foënard et al., ExpA, in prep.

[2] Planck Collaboration 2015 A&A 576A, 104P

