

Magnetic field in the ISM: Observations (Planck, PILOT, LOFAR) and simulations

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I will review the main observational properties of interstellar magnetic fields in the disk and halo of our Galaxy. These properties are inferred from a variety of observational methods, including synchrotron emission, Faraday rotation, Zeeman splitting, and dust polarization. I will discuss each of these methods in some detail and explain what it has taught us about the strength, the direction, and the spatial structure of interstellar magnetic fields in our Galaxy, laying the emphasis on the most recent advances and on the expected contributions from upcoming instruments. I will also discuss the present status of numerical simulations and see how their predictions square with current observations.