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The SOFIA airborne observatory and its potential of magnetic field measurement in star forming regions

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SOFIA, the Stratospheric Observatory for Infrared Astronomy, is a Boeing 747SP, equipped with a 2.7m telescope that flies at an altitude of 12-14 km (above the tropopause) to observe the far-infrared radiation from space which does not reach ground-based observatories due to absorption by water vapor. One of the SOFIA instruments is HAWC-pol, a far-infrared camera with 5 filters (50-200 micron) which was built to observe the far-infrared polarized dust emission in cold molecular gas clouds, particularly in star forming regions. As the dust grains align in the presence of interstellar magnetic fields, this allows to derive the structure and strength of magnetic fields in star forming regions on scales of 10 arc sec (4000 AU at the distance of the Orion nebula). This is new, because the Herschel satellite did not include a polarimetric instrument. We will describe SOFIA and its potential to make important magnetic field measurement in galactic clouds, important to understand the role of magnetic fields in star formation.

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