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Planck polarization data constrain synchrotron emission from Galactic dark matter

Dark Matter in our Galaxy may produce a linearly polarized synchrotron signal through the secondary emission of electrons and positrons originating from dark matter annihilations. Using the latest Planck data release, for the first time we use microwave synchrotron polarization to constrain Dark Matter annihilation in the Galaxy. We find that polarization is more constraining than synchrotron intensity by about one order of magnitude independently from uncertainties in the modeling of electron and positron propagation and the model of Galactic magnetic field.

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