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Constraints on Dark Matter Annihilation by Radio Observations of Milky Way[1] ANDREY EGOROV, ELENA PIERPAOLI, University of Southern California, JENNIFER SIEGAL-GASKINS, California Institute of Technology — WIMP annihilation in the Milky Way (MW) halo is expected to produce various energetic stable particles. These particles can manifest themselves through various emission processes. Such an emission spans almost the whole spectrum from radio to gamma bands. In a recent few years several groups reported the significant gamma ray excess at GeV energies in the MW center region, which can't be explained by conventional astrophysical sources. To explain this excess, one needs either an additional population of millisecond pulsars or the annihilating dark matter (DM). In the DM scenario, one may estimate the necessary WIMP properties. And several groups report rather close WIMP parameters needed. Naturally, we expect a radio counterpart of this gamma excess to be present, which originates as a synchrotron radiation of leptons produced by WIMP annihilation. And a comprehensive study of such a counterpart has not been conducted yet. Our work is in progress and focused on the low frequency emission. We are planning to present the general constraints on WIMP properties based on whole sky radio observations of MW (involving various radio surveys and Planck data), and also planning to support or weaken the DM interpretation of the gamma excess through studies of its expected counterpart.

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