Contribution ID: **199** Type: **Oral**

Dark Photon Dark Matter Detection with Radio Telescopes

Monday 25 August 2025 14:00 (20 minutes)

We propose utilizing radio telescopes to investigate the conversion of dark photons, a potential ultralight dark matter candidate, through two approaches: solar observations and direct telescope-based detection. In the first scenario, dark photon dark matter can efficiently convert into photons in the solar corona—the outermost region of the solar atmosphere—where the plasma mass of photons closely matches the dark photon rest mass. In the second scenario, the local absorption of dark photon dark matter can induce harmonic oscillations of electrons within the radio telescopes, producing a monochromatic radio signal detectable by the receivers. We analyze data from FAST, LOFAR, and the Parker Solar Probe to search for evidence of dark photon dark matter and to constrain its kinetic mixing coupling.

Collaboration you are representing

Author: LIU, Jia (Peking University)

Presenter: LIU, Jia (Peking University)

Session Classification: Dark Matter and Its Detection

Track Classification: Dark Matter and Its Detection