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## Impact of primordial magnetic fields on matter power spectrum

*Tuesday, March 5, 2024 3:00 PM (1 hour)*

Primordial magnetic fields (PMFs) offer a simple explanation for the origin of galactic magnetic fields as well as of the purportedly detected magnetic fields in cosmic voids. In the talk, I discuss how PMFs' influence on structure formation can offer a complementary method to test for their existence. Specifically, I discuss how PMFs enhance the matter power spectrum on small scales,  $< \text{Mpc}$ . On scales relevant to galaxies and black holes, I show that PMFs can significantly enhance the baryon fraction in halos as well as the abundance of halos. Next, I show that on scales below the baryon Jeans scales, PMFs can enhance dark matter power spectrum purely by gravitational influence. I conclude by arguing how search for dark matter minihalos can potentially provide the most sensitive probe for PMFs.

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