

## Magnetic field seeds from black holes accretion disks

*Friday 17 May 2024 15:30 (45 minutes)*

The origin and evolution of cosmological magnetic fields not only remains a subject that is still unresolved, it also has the potential to serve as a test for current cosmological models. This talk focuses on investigating different magnetic field seeds and explores potential origins involving black holes with charge, amplification processes, and distribution mechanisms on large scales.

The presentation delves into the possibility of primordial or stellar black holes as sources of these seeds, examining their potential to generate the required magnetic field amplitude through (i) their accretion disks acting as Biermann batteries that generate the magnetic field, and (ii) through black holes carrying an intrinsic electric charge. We employ numerical simulations, specifically using Illustris TNG-300 simulation, to investigate the sources of magnetic field seeds. We estimate the magnetic field in halos and the intergalactic power spectrum of magnetic amplitude.

Finally, we compare the observational estimates obtained on various scales, providing insights into the validity of the proposed mechanisms.

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