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Detecting Dark Millicharged Particles

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Millicharged particles (MCPs) i.e., particles with a small effective charge are a key component of various dark sectors. If these particles exist, they will be produced both in the early universe and in various astrophysical plasmas. The former results in an *irreducible density* of these particles, the so-called millicharged background, which can be detected using direct detection experiments. The latter can modify stellar evolution and be constrained using astrophysical observations. In this talk, I will discuss how we can constrain the MCP parameter space complementarily using terrestrial and astrophysical probes even and especially in the case where they do not comprise a significant dark matter fraction.

Authors: ILES, Ella; Prof. SCHUTZ, Katelin; Dr HEEBA, Saniya (McGill University)

Presenter: Dr HEEBA, Saniya (McGill University)

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