

Seminar

Boosting through the darkness: Extending Dark Matter direct detection limits using cosmic rays

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The recoil threshold of Direct Detection experiments limits the mass range of Dark Matter (DM) particles that can be detected, with most experiments being blind to sub-MeV DM particles. However, light DM particles can be boosted to very high energies via collisions with energetic Cosmic Ray electrons. This allows Dark Matter particles to induce detectable recoil in the target of Direct Detection experiments.

In our analysis, we used data from the XENONnT and Super-Kamiokande experiments. Energy dependent cross sections (due to specific Lorentz structure of the vertex) are also used which can significantly change the bounds from the 'constant cross-section' case, as is often used in literature. The bounds obtained are the most updated till date.

Monday, Oct 31st 2022

3:30 PM (Tea/Coffee at 3:15 PM)

Seminar Hall, TIFR-H