



Contribution ID: 28

Type: **not specified**

# Signals from Cosmic Boosted Strongly Interacting Dark Matter

*Sunday 3 November 2024 09:36 (18 minutes)*

In this work, we investigate the potential of cosmic boosted strongly interacting dark matter (CBSIDM), which opens up the sub-GeV mass range for exploration. The boosted kinetic energy of CBSIDM enhances Earth's ability to capture DM particles in this range, thereby extending the accessible mass range below 1 GeV and making direct detection signals observable. This also allows CBSIDM to constitute a larger fraction ( $f_\chi$ ) of the total dark matter. Previous studies have focused solely on the non-boosted, strongly interacting galactic dark matter component, where  $f_\chi$  was constrained by stringent limits on the non-boosted DM-nucleon scattering cross-section for masses between 1–10 GeV. For this new scenario, we derive stringent limits from large-volume neutrino detectors, such as DUNE and Super-Kamiokande (SK), as well as from dark matter direct detection experiments like XENONnT, along with broader astrophysical implications.

**Authors:** Prof. DUTTA, Bhaskar; GOSWAMI, Debopam (Department of Physics & Astronomy, Texas A&M University); RAY, Anupam; VERMA, Ankur

**Presenter:** GOSWAMI, Debopam (Department of Physics & Astronomy, Texas A&M University)

**Session Classification:** Dark Matter