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Beyond WIMPs at neutrino experiments: heavy and light Dark Matter

Wednesday, 19 December 2018 16:00 (1 hour)

I will discuss two novel proposals to probe Dark Matter (DM) with existing and upcoming data.
1. DM lighter than a GeV is unavoidably accelerated by scatterings of cosmic-rays, making it possible to detect it at experiments with large energy thresholds and volumes, like SuperKamiokande and DUNE. I will derive a new limit from public data, that turns out to be the strongest existing one in a wide region of parameter space, and discuss search strategies at current and future neutrino experiments.
2. Cosmic rays constitute our arguably unique direct access to energy domains of 10 TeV and above, and a wealth of data is/will soon be delivered by current/near-future telescopes (ANTARES, IceCube, KM3NeT, but also HESSII, CTA, LHAASO, CALET,...). Heavy DM constitutes therefore an ideal BSM target for these experiments: I will discuss the theory and phenomenology of DM models that evade challenges like the so-called unitarity bound, and propose related searches at such telescopes.

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