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Into the dark sector: new probes and model-building

Wednesday 9 May 2018 14:00 (15 minutes)

There has been a lot of activity about dark sectors in the recent years. Still, it seems like exciting ideas remain to be found and/or developed.
In this talk I will first review two recent ways of searching for a dark sector using virtual dark particles, which have been presented in arXiv:1609.01762/1705.10331/1710.00850.
Secondly, in the spirit of the workshop, I will discuss a new direction which seems certainly worth investigate: dark particle's "double fluxes" from nucleons or electrons. This might open a number of possibilities for dark sector searches at colliders.
Then I will outline a broad scenario, the "Conformal Dark Sector" (CDS), which seems to be a natural possibility to UV-complete a number of low-energy phenomenological scenarios, rendering them relatively immune to high-energy probes. The CDS scenario has characteristic predictions such as non-integer fifth forces, and deserves further investigations in many aspects including DM phenomenology, cosmology, and collider searches.

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