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Title: Dark Matter at the LHC

The nature of Dark Matter is one of the big open questions in physics. One of the approaches to unveiling the mysteries behind is to attempt to produce and discover dark matter in the laboratory. If dark matter is made up of a particle that can be produced in proton collisions within the kinematic reach of the LHC accelerator at CERN, then searches at the LHC experiments could lead to a much awaited breakthrough. Possibly production of the dark matter particle itself can be demonstrated, or the mechanism could be unveiled by which the dark matter connects to the known particles from the Standard Model. At the Vrije Universiteit Brussel, we have a long-standing track record of searches for dark matter with the CMS experiment, eg. in the context of supersymmetry, exotic Higgs boson decays, and also more exotic signatures. With leadership within CMS and in the broader LHC community, we have been among the drivers of the evolution of the dark matter program at the LHC in the past years. This also reflects in our regular collaborations with the in-house and broader phenomenology community. Recently, we also joined the small milliQan experiment to be built near the CMS experiment, aimed at signatures of a dark sector containing dark matter through the search for millicharged particles. In brief, the VUB boasts ample research experience and opportunities for accelerator dark matter searches in experimental particle physics.

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