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Type: **Ordinary**

Dark Matter searches in LHC

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Multiple cosmological observations indicate the existence of Dark Matter, which may be a weakly interacting massive particle (WIMP). In this case, Dark Matter could be produced in proton-proton collisions at the LHC, but would escape the detector without interacting. Final states consisting in pair-produced Dark Matter candidates would however be balanced by radiated particles from colliding partons. ATLAS and CMS experiments can therefore search for Dark Matter signal in events involving large amount of missing transverse energy in the detector. Analyses have been carried out in the context of the mono-jet, mono-photon, mono-W and mono-Z signatures, including both hadronic and leptonic W and Z decays. No evidence of physics beyond the Standard Model expectation has been observed, and the pair production of Dark Matter particles has been interpreted in the context of an effective field theory and simplified models. Limits on the suppression scale of the effective theory have been translated into bounds on the WIMP-nucleon scattering and WIMP annihilation cross sections. Results were derived from datasets of collisions at a center-of-mass energy of 7 and 8TeV, with an integrated luminosity of up to 20/fb.

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Classification de Session: Beyond the Standard Model

Classification de thématique: Experiment