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Lepton Jets: A New Dark Matter Signal at the LHC ALEXANDER BURGERS, University of Michigan — Recently, lepton-jets are predicted by theoretic models as a new type of Dark Matter signature in colliding beam experiments. These models are well motivated by recent astrophysical observations by the PAMELA and Fermi experiments. The LHC as a discovery machine will allow direct production of the Dark Matter particle as well as dark-photons, which could be the force carriers for Dark Matter particles and may be responsible for anomalous positron signals observed by PAMELA and Fermi. The new signature of Dark Matter is highly collimated, low P_T multi-lepton events. Detection of such a signature poses several experimental challenges. The presentation will report a feasibility study of lepton-jet events with the ATLAS detector using fully simulated Monte Carlo events. The analysis shows that the large ATLAS muon spectrometer would have the best sensitivity to detect muon-jets at the LHC.

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