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Search for Dark Interactions with the ATLAS experiment

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Hidden sector or dark sector states appear in many extensions to the Standard Model, to provide a candidate for the dark matter in the universe or to explain astrophysical observations of positron excesses. A hidden or dark sector can be introduced with an additional U(1)d dark gauge symmetry. The presence of the dark sector could be inferred either from deviations from the SM-predicted rates of Drell-Yan (DY) events or from Higgs boson decays through exotic intermediate states. The discovery of the Higgs boson during Run 1 of the Large Hadron Collider opens a new and rich experimental program that includes the search for exotic decays H -> Z Zdark -> 4l and. H -> Zdark Zdark ->4l, where Zdark is a dark vector boson.

In this talk, we will review the status of current searches for dark sector states with the ATLAS detector and the prospects for LHC Run 2.

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