

Dark Sector Searches using exotic Higgs Boson Decays in the ATLAS Collaboration

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This Dark Sector search in the ATLAS collaboration uses Higgs boson exotic decays as a possible portal to such new phenomena. Use is made of the Standard Model (SM) decay to four leptons:

$H \rightarrow ZZ^* \rightarrow 4l$

The current analysis is sensitive to the possible existence of “Dark Sector” or “Hidden Sector” vector boson (“Zd”) or pseudoscalar boson (“a”) that is beyond the SM:

$H \rightarrow ZZd \rightarrow 4l$ (electrons and muons)

$H \rightarrow Za \rightarrow 4l$ (models suggest that this is mainly to muons)

Analysis results from the full Run 2 dataset (36 inverse fb from 2016) and (20 inverse fb from 2015) will be presented.

Primary author: BAKER, Oliver Keith (Yale University)

Presenter: BAKER, Oliver Keith (Yale University)

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