

Abstract Submitted
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Search for dark photons in the $VBF + E_T^{miss} + \gamma$ final state with ATLAS at $\sqrt{s} = 13$ TeV¹ LACEY RAINBOLT, YOUNG-KEE KIM, University of Chicago, ATLAS COLLABORATION — The ATLAS Collaboration has performed a search for a Higgs boson (H) that is produced via vector boson fusion (VBF) and decays to a photon and a dark photon, using pp collision data collected at $\sqrt{s} = 13$ TeV and corresponding to an integrated luminosity of 139 fb^{-1} . Events are required to be consistent with the VBF topology, characterized by a pair of forward jets, and must also contain a final-state photon and large missing transverse momentum representing the dark photon. No significant excess of events above the expectation from the standard model background is found. Assuming a Higgs boson mass of 125 GeV, upper limits on the $H \rightarrow \gamma\gamma_d$ branching fraction are set by fitting the distribution of the transverse mass of the photon and the missing transverse momentum. Additionally, upper limits on the product of the cross section and the $\gamma\gamma_d$ branching fraction are set for Higgs-like mediators of various masses in the narrow width approximation.

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