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Search for Higgs boson decays to invisible final states produced in vector boson fusion in association with a low pT photon with the ATLAS detector NICHOLAS FELICE, University of Pittsburgh, ATLAS COLLABORATION — Some new physics extensions of the Standard Model predict that the 125 GeV Higgs boson can be a portal to invisible dark matter candidates through its decay. Direct searches for Higgs boson decay to invisible particles are a convenient way to explore this scenario. I present the results of a search for invisible decays of the Higgs boson produced through the vector boson fusion channel with an associated low pT photon in pp collisions at $\sqrt{s} = 13$ TeV with the ATLAS detector. I will discuss the main backgrounds, signal optimization, and uncertainties associated with the analysis, as well as the upper limit on the branching ratio of the Standard Model Higgs boson to a pair of invisible particles.

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