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WITHDRAWN A Search for the Standard Model Higgs Boson Produced via Vector Boson Fusion in the WW Channel using Boosted Decision Trees

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In July of 2012, the ATLAS and CMS experiments at the Large Hadron Collider announced the discovery of a new particle that is consistent with the Standard Model Higgs boson produced by gluon fusion. However, in order to avoid problematic divergences at high energies, the Standard Model also requires that the Higgs boson couples to the weak vector bosons. As a result, the search for the Higgs boson produced by vector boson fusion is an important test of the Standard Model. In addition, it also makes it possible to probe the exclusive coupling of the Higgs boson to the weak vector bosons. The ATLAS collaboration has developed a multivariate analysis that searches for the Standard Model Higgs boson that is produced by vector boson fusion and subsequently decays to two leptonically decaying W bosons. This analysis is driven by a boosted decision tree which significantly improves the expected sensitivity over a simple cut-based method.

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