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Searches for the BEH boson into fermions at ATLAS

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The discovery of a Higgs-like boson by the ATLAS collaboration relies on evidence from di-boson decays: $\gamma\gamma$, ZZ^* and WW^* . The Standard Model predicts that the Higgs boson with $m_H \sim 125\text{GeV}$ should also have significant branching ratios to pairs of bottom and charm quarks and tau-leptons and muons. Decays to these final states are significantly more challenging to detect due to large backgrounds, and hence the requirement to search for associated production of the Higgs boson. I will review searches from ATLAS for the Standard Model Higgs boson into fermions: $H \rightarrow \mu^+\mu^-$, $H \rightarrow \tau^+\tau^-$ and $H \rightarrow b\bar{b}$, in association with top-quark pairs and vector bosons.

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