

Boosted $H \rightarrow b\bar{b}$ tagging searches

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Several physics scenarios beyond the Standard Model predict the existence of new particles that can subsequently decay into a pair of Higgs bosons. These include pairs of SM-like Higgs bosons (HH) as well as asymmetric decays into two scalars of different masses (SH). For sufficiently high masses, the scalar S and the Higgs boson are Lorentz-boosted, thus the decay products are produced collimated. In the case where the Higgs bosons (or the scalar S) decay into a pair of bottom quarks, they can be reconstructed and identified inside a large radius jet. In this talk, the latest boosted resonant HH/SH $\rightarrow 4b$ searches by the ATLAS experiment are reported, focusing on results using LHC Run 2 data. The experimental techniques used for the boosted $H \rightarrow b\bar{b}$ tagging, and their impact to the analyses sensitivities, are also discussed.

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