

# A Search for Boosted Higgs and Other Low Mass Resonances decaying to two b-quarks with an associated jet at ATLAS

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The most common decay of the Higgs is to two b quarks, making it an invaluable tool to gain more insight into Higgs properties and any shortcomings of the Standard Model. At ATLAS, analyses looking for di-jet resonances are limited to masses above a TeV, due to the high transverse momentum (pT) requirements of ATLAS jet triggers. However, sub-TeV mass regions can be reached if the resonance is produced with a large relativistic boost provided by a radiated jet. The boost gives the decay products enough energy to pass the triggers, and makes them collimate into a single large-radius jet with a distinct two-pronged structure, which combined with b-tagging techniques, can be used to reduce the QCD backgrounds significantly. From a physics perspective, looking for Higgs decays in association with an additional jet gives us access to Higgs boson production through gluon-gluon fusion, which at high Higgs pT can be significantly increased by the presence of BSM couplings. Furthermore, this final state can also be used to search for dark matter mediator particles which decay to two b-quarks. This talk will give the audience an overview and results of the first analysis of this kind in ATLAS, using 80 fb<sup>-1</sup> of LHC Run-2 data.

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