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Boosted technique for Higgs measurement and New Physics Searches

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Highly Lorentz-boosted scalar particles (Higgs or Radion) decaying to bb or WW->4q can be reconstructed as single large-radius jets, and identified using jet substructure and deep neural networks. The techniques can be exploited for both the SM Higgs measurement and New Physics Searches. Two recent applications at the CMS experiments will be covered in this talk, including, 1) a search for standard model Higgs bosons produced with transverse momentum (pT) greater than 450 GeV and decaying to bottom quark-antiquark pairs, and 2) a first search for resonances decaying into a radion and a W boson in proton-proton collision data, with the radion reconstructed through its decay into two W bosons. In the future, we expect to extend these techniques to boosted H->WW and Higgs pair studies.

Refs:
https://arxiv.org/abs/2006.13251
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