Search for physics beyond the standard model in events with Higgs bosons and missing transverse momentum in proton-proton collisions at 13 TeV\(^1\) FRANK JENSEN, Univ of Colorado - Boulder — A search for physics beyond the standard model in events with one or more high-momentum Higgs bosons decaying to pairs of \(b\) quarks in association with missing transverse momentum is presented. The data, corresponding to an integrated luminosity of 35.9 fb\(^{-1}\), were collected with the CMS detector at the LHC in proton-proton collisions at the center-of-mass energy \(\sqrt{s} = 13\) TeV. The analysis utilizes a new \(b\) quark tagging technique based on jet substructure to identify jets from \(H \rightarrow bb\). Events are categorized by the multiplicity of \(H\)-tagged jets, jet mass, and the missing transverse momentum. No significant deviation from standard model expectations is observed. In the context of supersymmetry (SUSY), limits on the cross sections of pair-produced gluinos are set, assuming that gluinos decay to quark pairs, \(H\) (or \(Z\)), and the lightest SUSY particle LSP through an intermediate next-to-lightest SUSY particle NLSP. With large mass splitting between the NLSP and LSP, and 100\% NLSP branching fraction to \(H\), the lower limit on the gluino mass is found to be 2010 GeV.

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