

Can we discover a light singlet-like NMSSM Higgs boson at the LHC?

Thursday, 5 April 2018 17:45 (15 minutes)

In the next-to minimal supersymmetric standard model (NMSSM) an additional singlet-like Higgs boson with small couplings to the standard model (SM) particles is introduced. Although the mass can be well below the discovered 125 GeV Higgs boson its small couplings may make a discovery at the LHC difficult.

We use a novel scanning technique to efficiently scan the whole parameter space and determine the range of cross sections and branching ratios for a light singlet-like Higgs boson below 125 GeV.

This allows to determine the perspectives for the future discovery potential at the LHC. Specific LHC benchmark points are proposed. A discovery of such a light Higgs singlet would strongly point to a singlino as a dark matter candidate.

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Session Classification: Open Session C)

Track Classification: Default track