

## Probing the Electroweak Phase Transition with Exotic Higgs Decays

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An essential goal of the Higgs physics program at the LHC and beyond is to explore the nature of the Higgs potential and shed light on the mechanism of electroweak symmetry breaking. An important class of models defining the strength and order of the electroweak phase transition is driven by the Higgs boson coupling to a light new state. This Snowmass white paper points out the existence of a region of parameter space where a strongly first order electroweak phase transition is compatible with exotic decays of the SM-like Higgs boson. A dedicated search for exotic Higgs decays can actively explore this framework at the Large Hadron Collider (LHC), while future exotic Higgs decay searches at the high- luminosity LHC and future Higgs factories will be vital to conclusively probe the scenario.

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