

Looking for Split Supersymmetry in Higgs signals

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We examine the possibility of detecting signals of split supersymmetry in the loop-induced decay $h \rightarrow \gamma\gamma$ of the Higgs boson at the Large Hadron Collider, where charginos, as surviving light fermions of the supersymmetric spectrum, can contribute in the loop. We perform a detailed study of uncertainties in various parameters involved in the analysis, and thus the net uncertainty in the standard model prediction of the rate. After a thorough scan of the parameter space, taking all constraints into account, we conclude that it is very unlikely that signals for Split Supersymmetry can be detected in Higgs signals at the LHC and one would require a linear collider to be able to make a distinction.

Primary author: Mr GUPTA, Sudhir (Harish-Chandra Research Institute)

Co-authors: Prof. MUKHOPADHYAYA, Biswarup (Harish-Chandra Research Institute); Dr RAI, Santosh (Harish-Chandra Research Institute)

Presenter: Mr GUPTA, Sudhir (Harish-Chandra Research Institute)

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