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On the impact of the Higgs boson on the production of exotic particles at the LHC

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Many new physics models contain new particles that interact with the Higgs boson. These particles could be produced at the LHC via gluon-gluon fusion with an off-shell Higgs, as well as via the Drell-Yan process if charged under a gauge group. We consider simplified scenarios where the Standard Model is extended by one scalar or fermionic field that interacts with the Higgs boson and we evaluate the impact of the Higgs interaction on the production of the exotic particles at the LHC. This analysis applies in particular to TeV scale seesaw scenarios of neutrino mass generation.

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