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Feasibility study to hunt for dark matter from a Higgs boson with displaced and emerging jets

A study is performed to look for signals of a strongly coupled dark sector. Many dark matter experiments have searched for weakly interacting particles without success. Hidden valley models with a strongly coupled dark sector can offer an alternative dark matter candidate, and may have evaded previous searches. We consider such a dark-QCD sector with a Standard Model Higgs mediator. Semivisible or emerging jets are produced by the decay of the mediator Higgs into dark-quarks. These dark quarks then shower and hadronize in the hidden sector, and a subset decay back to Standard Model particles. Signal samples are generated using the Hidden Valley Module in Pythia, and compared to Standard Model background processes. These studies motivate a possible strategy for a new LHC search.

Mini Symposia (Invited Talks Only)

Authors: BADEA, Anthony (University of Chicago (US)); DI PETRILLO, Karri Folan (University of Chicago); MANTINAN, Matias Nahuel (University of Chicago (US))

Presenter: MANTINAN, Matias Nahuel (University of Chicago (US))

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