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Type: **Parallel Sessions**

Higgs decays (partially) into the dark: towards the Higgs “neutrino floor”

Thursday 21 October 2021 16:00 (10 minutes)

We investigate semi-invisible Higgs decays $h \rightarrow ZX$ (with X an invisible particle) as probes of the possible interactions of the Higgs boson with a dark sector. This possibility can occur in dark matter models with a low-mass pseudoscalar mediator to the dark sector, as well as in models of axion-like particles or dark photons interacting with the Higgs boson. The SM decay $h \rightarrow Z\nu\nu$ constitutes a “neutrino floor” for this type of search (and provides a sensitivity target for the search), and we study the window that is left for probing new physics via $h \rightarrow ZX$ at the LHC and future colliders.

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