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Neutrino Portals to the Dark Sector

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Dark sectors that communicate with the visible sector via SM neutrinos are well-motivated benchmarks for current and future experimental searches. However, they are much more elusive than the typical minimal portal scenarios (e.g dark photon, dark Higgs portals). In this talk, we will discuss some models of neutrino portal dark matter that become increasingly more invisible, and describe strategies to search for these dark matter candidates at experiments such as Belle II and at the Forward Physics Facility. In particular, I will focus on two models: heavy neutral leptons that decay invisibly to dark matter, and purely neutrinophilic dark matter.

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