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Phenomenology of Dark Sectors at the Short-Baseline Neutrino Experiments¹

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Recent work has demonstrated that the Short-Baseline Neutrino (SBN) Experiments will have leading sensitivity to several dark sector scenarios. Two of these experiments have begun taking data and will be able to probe dark sector physics in the near future. I provide an overview of the capabilities of these experiments to probe dark sector physics, focusing on two well-motivated scenarios: Higgs portal mediators and inelastic dark matter. Using leading new event generation techniques, simulated signals of these models are compared with backgrounds. I propose several different, complementary strategies for maximizing the sensitivity to dark sector physics. All three SBN experiments will be able to probe new ground in these models.

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