

# Neutrinos & Dark Matter: The Elusive Components of Nature

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Neutrinos were the first elusive components of matter to be discovered more than half a century ago. They have since then revealed to be omnipresent in nature and endowed with non trivial properties making them the first direct evidence of Beyond Standard Model (BSM) physics. Another elusive component of matter seems to be needed to explain 25% the matter content of the Universe: the so-called Dark Matter (DM). Among the many BSM candidates for DM, Weakly Interactive Massive Particles (WIMP) are perhaps the most well motivated one, as WIMP provide the correct cosmological abundance via thermal production.

Many direct detection experiments have been looking for WIMP through their elastic scattering with a target material, without success so far. We discuss how SM coherent scattering of natural neutrinos with the nucleus of the target material of DM direct detection experiments will eventually become an irreducible background for these experimental searches. We investigate the effect of BSM neutrino-nucleon interactions on these searches for a few theoretically motivated scenarios. We examine the possible consequences for current and future DM experiments.