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Neutrino and Axion Astronomy with Dark Matter Experiments

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Beyond their unprecedented sensitivity to dark matter (DM), as I will demonstrate, large direct detection experiments constitute impressive neutrino telescopes. This opens a new window into astronomy, leading to possible insights into major problems such as the origin of supermassive black holes. Furthermore, DM experiments can be exploited as novel tools in multi-messenger astronomy for exploration of new physics. I will discuss detection of relativistic axions from transient astrophysical sources (e.g. axion star explosions), which can lead to new insights into the fundamental axion potential.

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