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# Shadow-charge detectability in large-scale neutrino detectors

Over the years, many exotic particles have been theorized to explain the presence of dark matter in the universe, yet none have been confirmed. Recently, a new theoretical particle has made its way to the dark matter candidate family, carrying profound implications for our understanding of the universe.
Shadow-charges leverage a fundamental principle: classical laws of physics are a mere limit of the deeper quantum-mechanical laws. This simple argument has deep consequences, such as the existence of a 'shadow' charge density that follows geodesics independently of any surrounding matter fields.
We propose that this charged dark matter might excite atoms, therefore producing luminescence light when going through the Earth. We offer an analytical study of its detectability in large-scale neutrino detectors such as IceCube or KM3NeT, and aim to constrain their parameter space to simplify later simulations and improve sensitivity limits in such detectors. We also discuss the impact of a screening effect on their interaction with matter.

## Collaboration(s)

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