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Alternative searches for physics beyond the Standard Model in LEGEND-200

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Despite the incredible success and resilience of the Standard Model of particle physics, there are a few reasons to believe that it is not the final picture of all physical phenomena. Notable examples include the existence of neutrino mass and the collection of cosmological observations which comprise the case for a dark and widespread matter. While there are many experiments dedicated to tests of specific physics, the incredible abundance of theories that need investigating demands that experimentalists be highly opportunistic and leverage existing experiments for as many tests as possible. LEGEND-200 is the 200 kg phase of the LEGEND collaboration and is a low background search for neutrinoless double beta decay. On top of being one of the leading searches for neutrinoless double beta decay, LEGEND-200 can be leveraged as a platform for a wide variety of searches for physics beyond the Standard Model that go beyond neutrino mass mechanisms. Building on the success of its predecessors MAJORANA and GERDA, possible searches can include tests of fundamental symmetries, sterile neutrino models, and exotic currents in the weak interaction. This poster will provide an overview of the types of searches that LEGEND-200 can perform. By leveraging all of the existing detector systems in the experiment the collaboration can widely search for hints of physics beyond the Standard Model.

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Poster prize

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