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Electrically charged stable particles in MoEDAL

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The MoEDAL experiment at the LHC has been designed to search for highly ionising avatars of New Physics such as magnetic monopoles and dyons. Hypothetical stable particles of single or multiple electric charge, that arise in models of supersymmetry, quirks, strangelets, Q-balls, or as black-hole remnants, can be detected in MoEDAL. The recent analysis of a prototype nuclear track detector has set limits on electric charges, extending previous bounds set by other experiments towards high charges. Studies on supersymmetric models and neutrino mass scenarios have demonstrated the MoEDAL potential to discover long-lived particles with charge in the range from one to several electrons. All these aspects of the MoEDAL experiment will be discussed in the presentation.

MoEDAL search: arXiv:2112.05806 [hep-ex]

Prospects: Eur.Phys.J.C 80 (2020) 5, 431

Eur.Phys.J.C 80 (2020) 6, 572

Eur.Phys.J.C 81 (2021) 8, 697

arXiv:2204.03667 [hep-ph]

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