



MoEDAL: a dedicated exotic particle search experiment at LHC

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ABSTRACT

The Monopole and Exotics Detector at the LHC (MoEDAL) is an experiment dedicated to the search for magnetic monopoles, highly electrically charged objects (HECOs) and other Highly Ionizing Particle (HIP) messengers of new physics at the LHC. The baseline MoEDAL detector consists of stacks of Nuclear Track Detectors (NTDs) made of up of CR39, Makrofol, and Lexan foils as well as trapping detectors comprised of aluminum elements placed near the interaction point (IP8) of the LHCb experiment. The MoEDAL experiment collected 2.2 fb⁻¹ of p-p collision data at a center of mass energy of 8 TeV during LHC Run-1 and 6.46 fb⁻¹ of collision data at a center of mass energy of 13 TeV during LHC's Run-2. No HIP candidates were found to-date. For HIP pair production via the Drell-Yan mechanism and photon fusion and for monopoles with spin 0, 1/2 and 1, this search place constraints on the direct production of magnetic monopoles with up to ten Dirac magnetic charges for masses ranging from 1450 GeV/c² to 3.9 TeV/c². In addition, constraints were placed on the production of HECO for charges ranging from 5e to 350e (e being the charge of the electron) for masses in the range of 80 GeV/c² to 3.4 TeV/c², depending on the spin of the particle. These are the best limits obtained on the production of HIPs at any accelerator facility until this date.

DATE
07 August, 2024

TIME
03:00 PM

VENUE
PAMU Seminar Room



Everyone is invited to attend