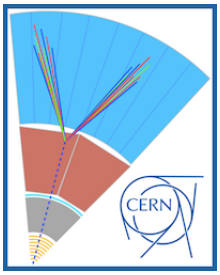

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The MoEDAL-MAPP New Physics Search Facility at the LHC

Tuesday 2 July 2024 13:30 (20 minutes)

The MoEDAL experiment at IP8 on the LHC ring is the 7th LHC experiment and the first dedicated to the search for BSM physics. It took data at LHC's Run-1&2. The MoEDAL detector is an unconventional and mostly passive detector dedicated to the search for Highly Ionizing Particle (HIP) avatars of new physics such as magnetic monopoles, Q-balls, dyon, microscopic black-hole remnants, and massive (peudo-)stable charged or multiply charged particles. An upgraded MoEDAL detector, installed for Run-3, with improved sensitivity is currently taking data. A new calibration of MoEDAL's CR-39 Nuclear Track Detectors allows us to also search for massive singly & multiply electrically charged Long-Lived Particles (LLPs).

MoEDAL-MAPP is currently installing the MoEDAL Apparatus for Penetrating Particles (MAPP-1) in the UA83 tunnel ˜100m from IP8 as part of MoEDAL-MAPP's New Physics Search Facility at the LHC. MAPP-1 extends MoEDAL's reach to include sensitivity to Feebly Ionizing Particles (FIPs) such as milli-charged particles and other weakly ionizing particle avatars of new physics. MAPP-1 also has sensitivity to charged and neutral LLPs. The MoEDAL-MAPP Collaboration plans to add the MAPP-2 detector to the Search Facility for data taking at the High Luminosity LHC to greatly enhance our sensitivity to neutral LLPs. We are proposing to deploy MAPP-2 in the UGC1 gallery adjacent to IP8. Both MAPP-1 and MAPP-2 are sensitive to charged and photonic decays from, for example, dark sector, heavy neutrino, mirror-world and supersymmetric scenarios.

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Session Classification: Dedicated or uniquely-sensitive long-lived particle detectors