Contribution ID: **524** Type: **Parallel Talk**

The MAPP (MoEDAL Apparatus for Penetrating Particles) Upgrade to the MoEDAL-LHC Experiment at Run-3

Saturday, 9 July 2022 17:00 (20 minutes)

The MoEDAL experiment deployed at IP8 on the LHC ring was the first dedicated search experiment to take data at the LHC in 2010. It was designed to search for Highly Ionizing Particle (HIP) avatars of new physics such as magnetic monopoles, dyons, Q-balls, multiply charged particles, and massive slowly moving charged particles in p-p and heavy-ion collisions. The MoEDAL detector will be reinstalled for LHC's Run-3 to continue the search for electrically and magnetically charged HIPs.

An important upgrade to MoEDAL, the MoEDAL Apparatus for Penetrating Particles (MAPP), approved by CERN's Research Board in December 2021, is now the LHC's newest detector. The MAPP detector, positioned in UA83, expands the physics reach of MoEDAL to include sensitivity to feebly-charged particles with charge, or effective charge, as low as 10-3 e (where e is the electron charge). Also, the MAPP detector In conjunction with MoEDAL's trapping detector gives us a unique sensitivity to extremely long-lived charged particles. MAPP also has some sensitivity to long-lived neutral particles.

In this talk we will describe the design, construction and installation of the MAPP detector as well as briefly touch on the physics reach of this apparatus. Additionally, we will very briefly report on the plans for the MAPP-2 upgrade to the MoEDAL-MAPP experiment for the High Luminosity LHC (HL-LHC). We envisage that this detector will be deployed in the UGC1 gallery near to IP8. This phase of the experiment is designed to maximize MoEDAL-MAPP's sensitivity to very long-lived neutral messengers of physics beyond the Standard Model.

In-person participation

Yes

Primary authors: RAJANTIE, Arttu (Imperial College London); SOLUK, Richard (University of Alberta)

Presenter: SOLUK, Richard (University of Alberta)

Session Classification: Operation, Performance and Upgrade (Incl. HL-LHC) of Present Detectors

Track Classification: Operation, Performance and Upgrade (Incl. HL-LHC) of Present Detectors