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First experimental search for production of magnetic monopoles via the Schwinger mechanism[1] ADITYA UPRETI, University of Alabama, MoEDAL Collaboration, CERN — The Schwinger mechanism predicts the production of electron-positron pairs in presence of an extremely strong electric field via quantum-mechanical tunnelling. By the electromagnetic duality, if magnetic monopoles (MMs) exist, they would be produced by the same mechanism in sufficiently strong magnetic field. The Pb-Pb heavy ion collisions at the LHC produced the strongest magnetic fields in the known Universe. The first search for MM production via Schwinger mechanism was conducted by the MoEDAL experiment during the 2018 heavy ion run at the LHC, when its detectors were exposed to 0.237 nb^{-1} of 5.2 TeV Pb-Pb collisions. In this talk, I plan to describe this search for MMs in heavy ion collisions. I will highlight the advantages of Schwinger mechanism over its previously considered counterparts, the Drell-Yan mechanism and the photon fusion mechanism, and provide an outlook of future searches that would expand sensitivity of MoEDAL detectors to higher magnetic charges.

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