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About use of Timepix3 pixel detectors for real time tracking and recognition of highly ionizing particles and a possible investigation of their behavior in semiconductor sensors.

Thursday 12 July 2018 15:30 (30 minutes)

An overview of Timepix3 pixel detectors capabilities for highly ionizing particle 3D tracking will be given. The emphasis will be put on their methodological adaptation specifically towards the search of stable massive charged particles, both electrically and magnetically, in particular to a magnetic monopole within the MoEDAL experiment. The detector use will profit from its capability to measure for every single particle its arrival time with resolution of about 1.6 ns and energy losses along its track in the sensor per pixel, as well as delta electrons associated to the particle track, what permits the particle identification. The particles implanted in the sensors can be visualized and their decay can be measured with above given time resolution. The presence of eventual particle with strong electric or magnetic properties could be even recognized through expected perturbation of independent light particle tracks in the sensor. The proposed concept will be documented based on previous experimental tests performed with Timepix3 devices at several facilities.

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Session Classification: Mini-workshop on Highly Ionising Avatars of New Physics