



Contribution ID: 54

Type: **Oral**

## First Detection of 120 GeV Protons with SNSPDs

*Wednesday, November 8, 2023 1:45 PM (15 minutes)*

SNSPDs are well established as an ultra-fast and highly efficient single photon detector technology. Typical sensor properties, such as small pixel size, low power, and low material thickness, make these sensitive detectors ideal for tracking particle detector applications. Cases where only modest detector areas are needed are prime candidates for this new particle detection technology. One example is a forward ion detector at the Electron Ion Collider which would detect high energy ions scattered at very small angles relative to the beam. We report the first detection of 120 GeV protons using SNSPDs of various sizes as first step in demonstrating the feasibility of such a detector system at the EIC. We also discuss other future applications of SNSPD particle detectors in nuclear and particle experiments and future R&D plans.

\*This work has been supported by the U.S. Department of Energy, Office of Science, Offices of Nuclear Physics, under contract number DE-AC02-06CH11357 and the U.S. Department of Energy, Office of Science under the Microelectronics Co-Design Research Project “Hybrid Cryogenic Detector Architectures for Sensing and Edge Computing enabled by new Fabrication Processes”(LAB 21-2491).

### Early Career

Yes

**Primary authors:** LEE, Sangbaek (Argonne National Laboratory); ARMSTRONG, Whitney (Argonne National Laboratory)

**Presenter:** LEE, Sangbaek (Argonne National Laboratory)

**Session Classification:** RDC8

**Track Classification:** RDC Parallel Sessions: RDC8: Quantum and Superconducting Sensors