

# Advancements in Charge Detection: A High-Resolution, Wide Dynamic Range Prototype for Ion Beam Monitoring

Thursday 18 July 2024 20:40 (20 minutes)

We present an innovative charge detector designed with high resolution and a wide dynamic range to fulfill ion beam monitoring requirements. The detector prototype, constructed using HERD Si photodiodes and Calo PD readout electronics, underwent rigorous testing during HERD and AMS beam tests at CERN SPS facilities. Initial testing showcased the detector's exceptional performance, emphasizing both high resolution and a dynamic range capable of measuring nuclei with atomic numbers ranging from 1 to 80. The prototype's compatibility with fast, practically real-time data analysis positions it as an ideal candidate for online applications. This presentation will unveil the results from the prototype's testing phase, highlighting its capabilities and performance metrics. It will delve into ongoing detector development, exploring potential applications, and discussions will extend to future development pathways and refinements aimed at enhancing the detector's functionality and versatility.

## Alternate track

1. Accelerator: Physics, Performance, and R&D for Future Facilities

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Yes

**Authors:** BERTI, Eugenio (Universita e INFN, Firenze (IT)); PACINI, Lorenzo (INFN, Firenze (IT)); SCARINGELLA, Monica; MORI, Nicola (INFN Florence); STARODUBTSEV, Oleksandr (Universita e INFN, Firenze (IT)); Dr BETTI, Pietro (Department of Physics and Astronomy, University of Florence and INFN sezione di Firenze)

**Presenter:** Dr BETTI, Pietro (Department of Physics and Astronomy, University of Florence and INFN sezione di Firenze)

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**Track Classification:** 13. Detectors for Future Facilities, R&D, Novel Techniques