Contribution ID: **179** Type: **Oral presentation**

# Demonstration of nA current resolution of the Cyogenic Current Comparator

*Thursday 8 September 2022 09:00 (20 minutes)*

The Cryogenic Current Comparator (CCC) at the heavy-ion storage ring CRYRING@ESR at GSI provides a calibrated non-destructive measurement of beam current with a resolution of 10 nA or better. With traditional diagnostics in storage rings or transfer lines a non-interceptive absolute intensity measurement of weak ion beams (< 1 μA) is already challenging for bunched beams and virtually impossible for coasting beams. Therefore, at these currents the CCC is the only diagnostics instrumentation that gives reliable values for the beam intensity independently of the measured ion species and without the need for tedious calibration procedures. Herein, after a brief review of the diagnostic setup, an overview of the operation of the CCC with different stored ion beams at CRYRING is presented. The current reading of the CCC is compared to the intensity signal of various standard instrumentations including a Parametric Current Transformer (PCT), an Ionization Profile Monitor (IPM) and the Beam Position Monitors (BPMs). It was shown that the CCC is a reliable instrument to monitor changes of the beam current in the range of nA.

## Summary

**Primary author:** CRESCIMBENI, Lorenzo (Friederich schiller universität jena)

**Co-authors:** HAIDER, David (GSI Helmholtz Centre for Heavy Ion Research); SIEBER, Thomas (GSI)

**Presenter:** CRESCIMBENI, Lorenzo (Friederich schiller universität jena)

**Session Classification:** Session 2: Beam Diagnostics

**Track Classification:** Beam diagnostics