

CRYOGENIC CURRENT COMPARATOR (CCC): ABSOLUTE BEAM CURRENT MEASUREMENT IN THE ORDER OF nA

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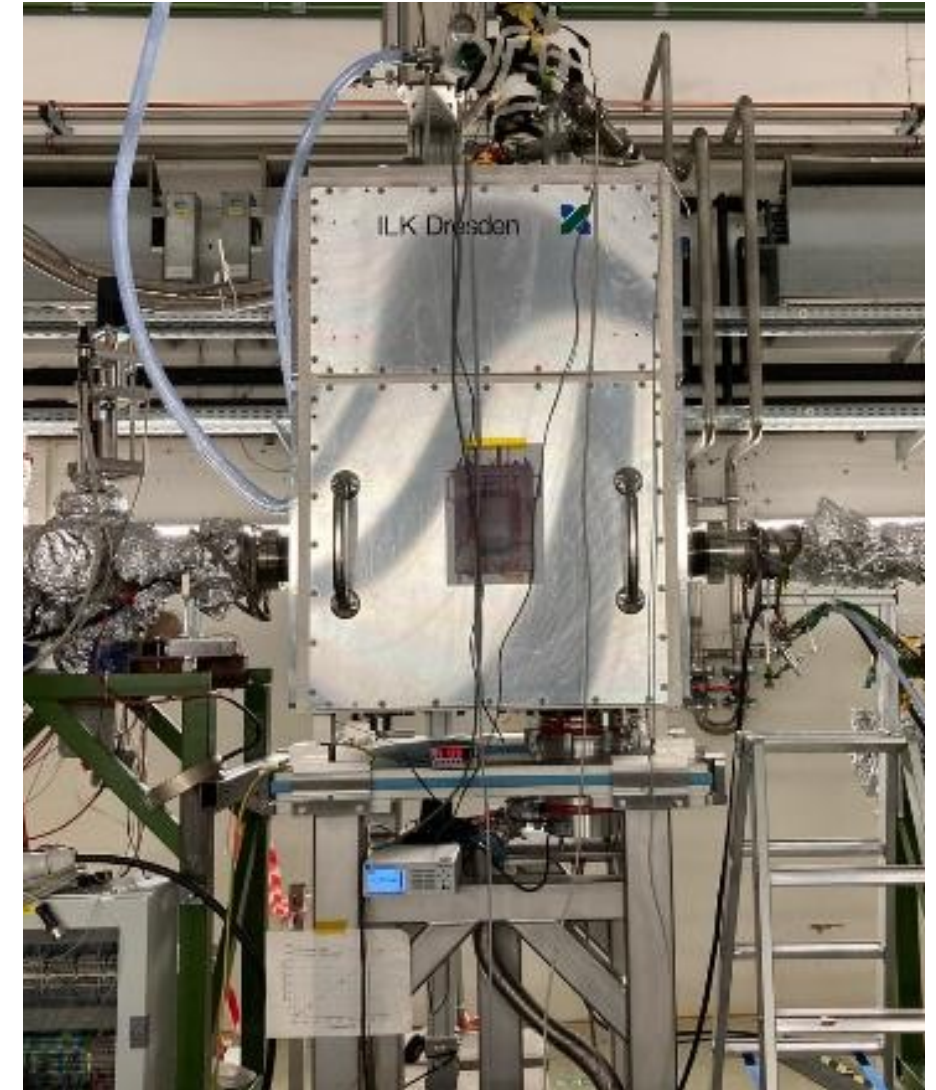
Beam Diagnostics Group, GSI

On behalf of the CCC
collaboration and the GSI-
CCC team

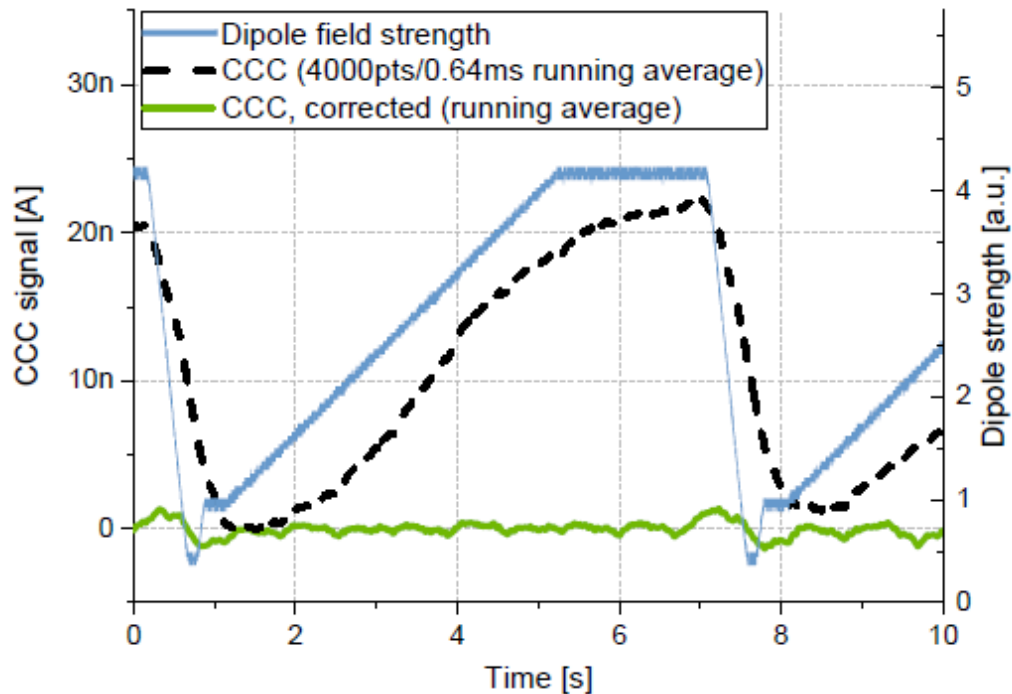


CCC team at GSI:

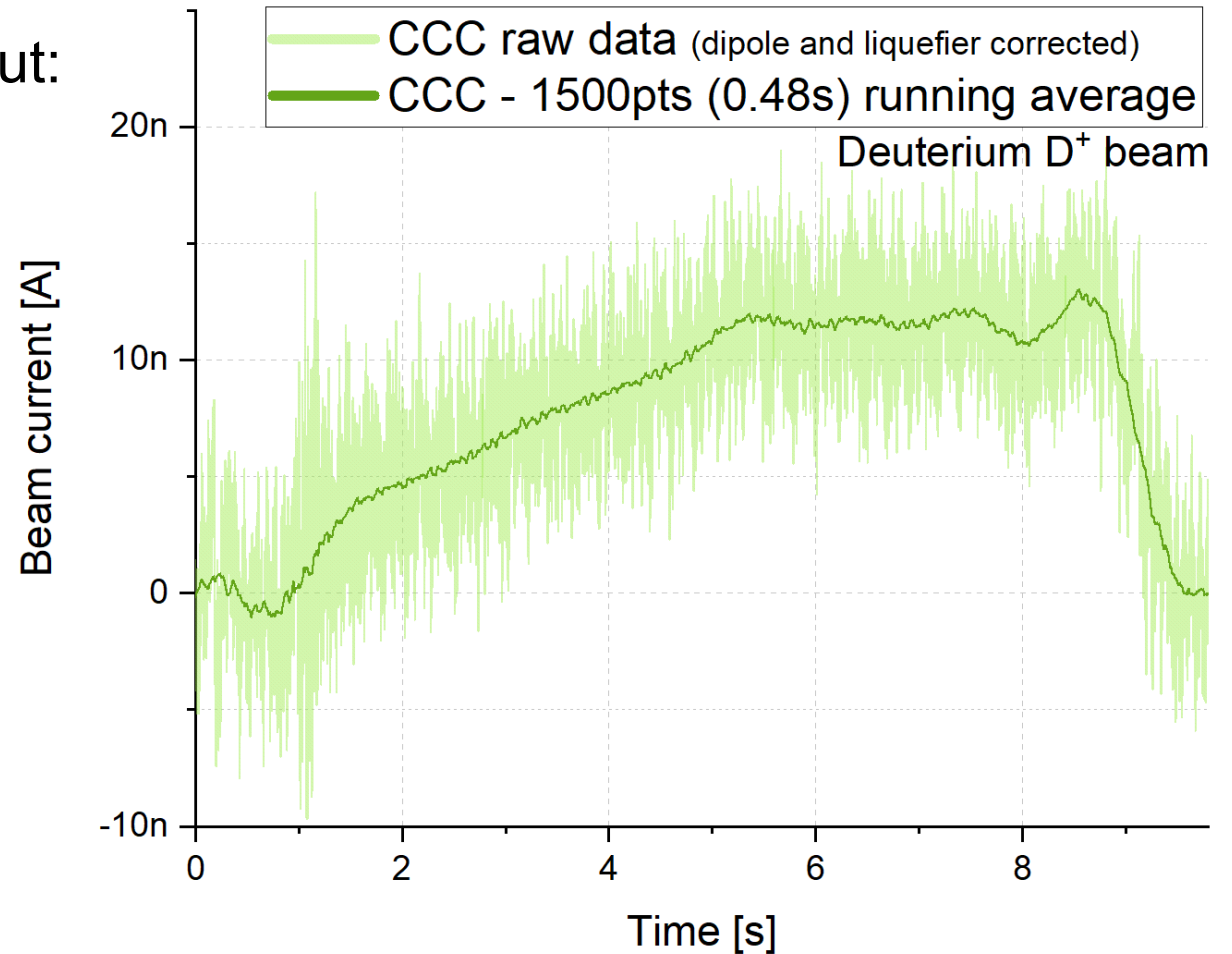
T. Sieber (project leader)



- CCC has been tested in [CRYRING@ESR](#), a storage ring in GSI, confirming it's current resolution in the order of the nA
- Some issues and limitations has been found out:
 - Limited standing time
 - Low magnetic shielding
 - Limited Slew Rate



Dipole field seen by the CCC during operation in CRYRING

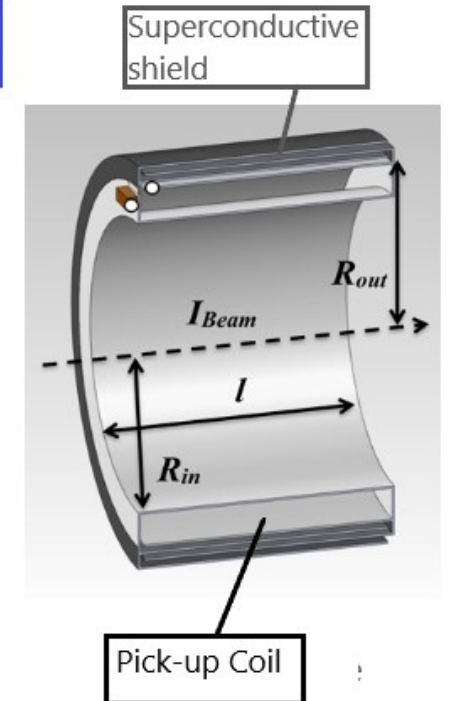
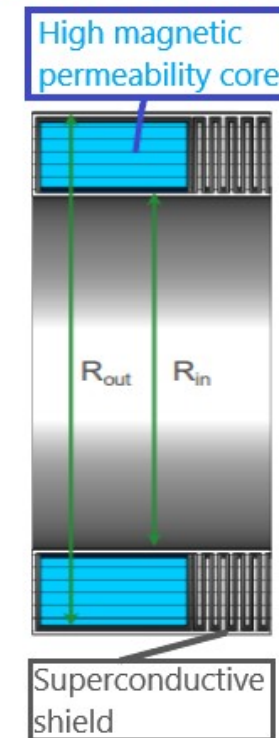


Deuterium beam measured with CCC in crying

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- **Cryogenic improvements** to improve the standing time

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- **Study and development of an axial coreless CCC:**
 - A new geometry for the CCC has been developed, it will have an axial geometry and will be built without the high permeability core
- The lack of the Core will strongly reduce the low frequency noise
- The axial geometry allow to reach a much higher magnetic shielding, around **200 dB**, instead of the **75 dB** of the radial version
- The new CCC will be equipped with a double squid system, to improve the slew rate of the system

Radial CCC with Core Axial Coreless CCC



- The new CCC will be installed and tested in the lab in the next weeks
- The test on the accelerator environment will be held in November and December 2023, allowing to test the CCC as it will be used in FAIR
- This test will allow us to define the best possible version of the CCC for FAIR

If you want more information, you can find me at my poster about the CCC

Thanks for your attention