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Helmholtz Institute Jena

Next Generation of CCCs

Nächste Generation von Kryo-Stromkomparatoren für Beschleunigeranlagen

Thomas Stöhlker

FSU Jena, HI-Jena, GSI Darmstadt

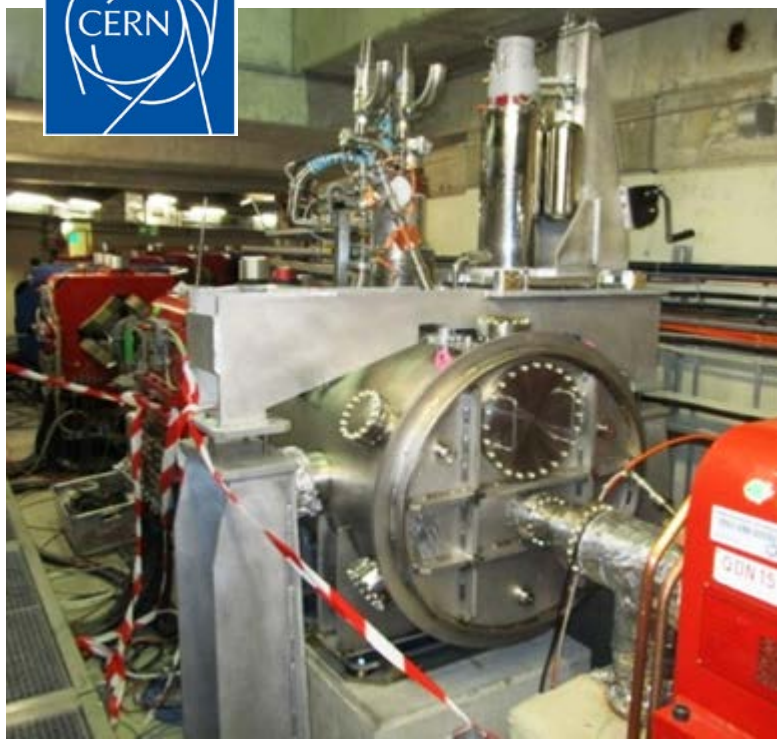
KfB Online Treffen, 7.-8. Sept. 2020

Next Generation of CCCs Status 2020

SC Shield

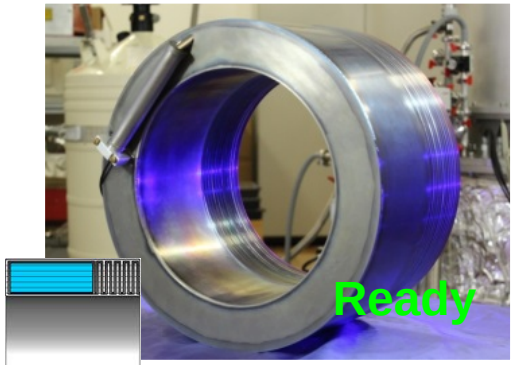
SQUID

Pickup

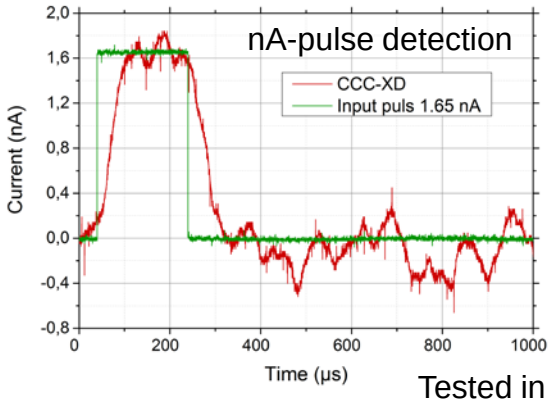


Running Nb-CCC system @ CERN AD

CCC Sensors Development for CRYRING



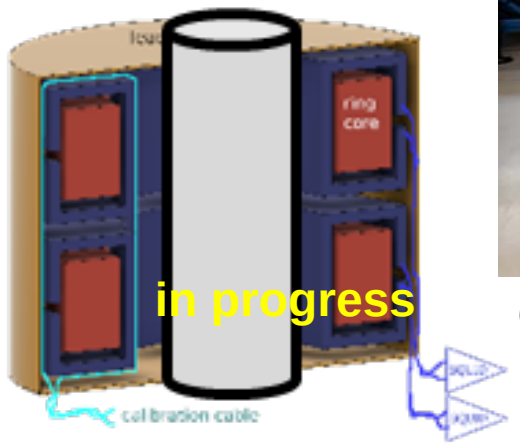
Nb-CCC-XD



Tested in Cryo-Detector Lab @ FSU Jena

Pb-Coreless-CCC-XD

Pb-Dual-CCC-XD



Cryostat integration @ GSI

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Next Generation of CCCs

Content

Task 1:

eXtended Dimensions (-XD) in beam

1.1 Cross-sensitivity reduction
- Mechanical vibrations
- Gas pressure
- Electrical grounding

1.2 Inner tubes & gaps
- Material problems
- Capacitive recharging currents

1.3 Software
- Digital data processing
- System integration

Task 2:

Small & smart (-Sm) for new applications

2.1 Sub-nano resolution
- Beam & reference Dual-CCC
- Interfering signal compensation
- DC & AC sensor path

2.2 Dry system
- Liquid He free cooling
- Noise reduction

2.3 Software
- Digital data processing

Task 3:

High Tc (-HTc) low cost

3.1 Feasibility & limits
- Magnetic shielding
- SQUID resolution
- Beamline cryostat

3.2 Lab-prototype
- Long-term stability
- Application test

Consolidate CCC systems for FAIR and CERN **Open new application fields** **3.5 FTE**

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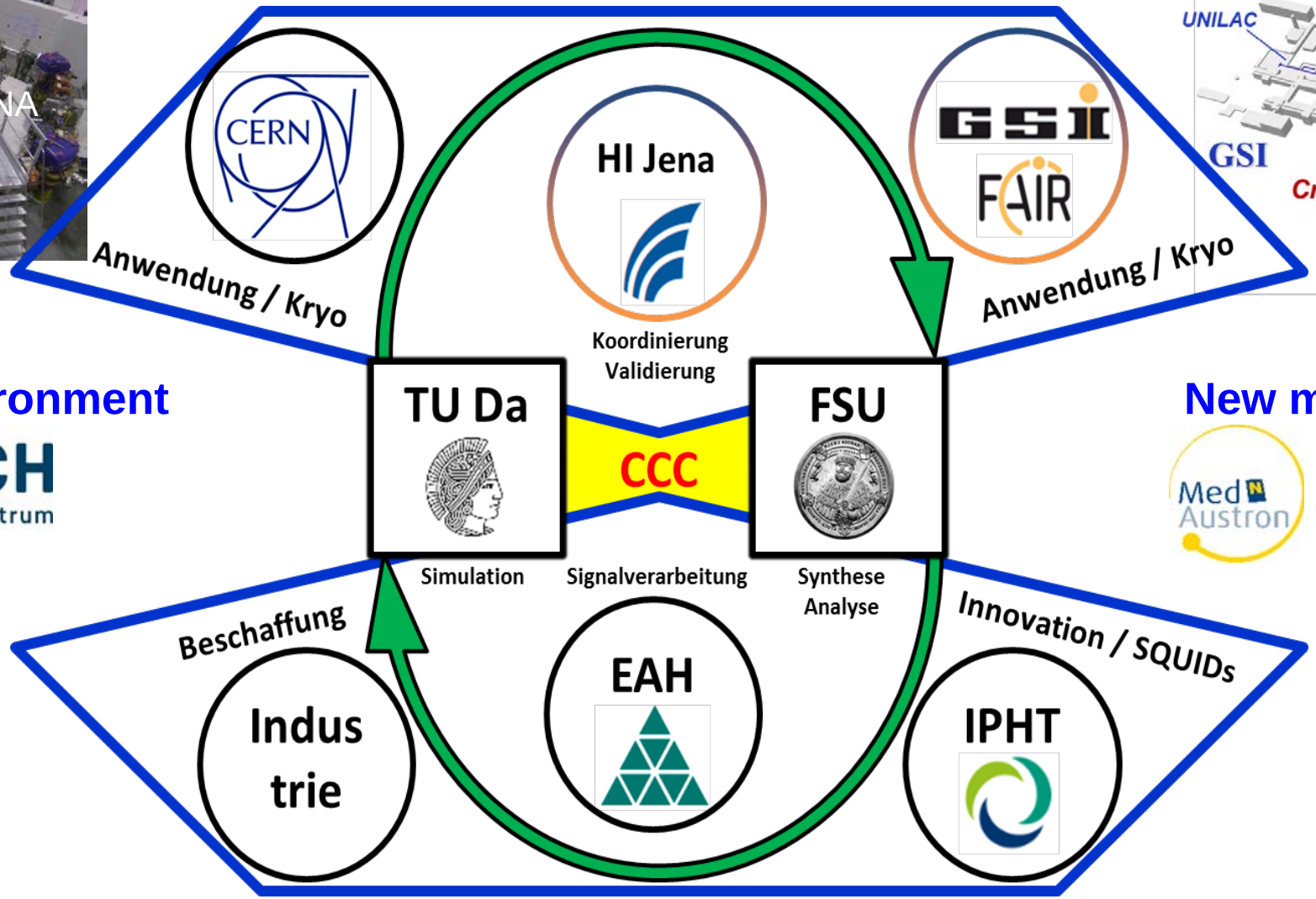
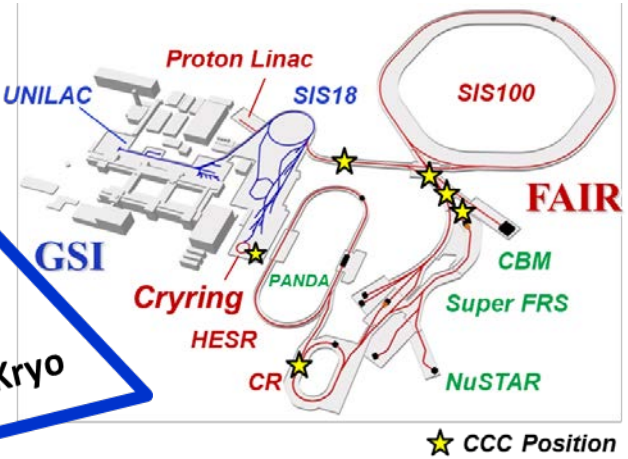
Association





New test environment

JÜLICH Forschungszentrum

New medical application

MedAustron

HIT Heidelberger Ionenstrahl-Therapiezentrum

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