

# ACCELERATOR SEMINAR

**Jiaoni Bai**

GSI Helmholtzzentrum für Schwerionenforschung GmbH

**Thursday, 28<sup>th</sup> September at 4 p.m.**

**KBW lecture hall**

Planckstraße 1, 64291 Darmstadt

## **"The FAIR Bunch-to-Bucket Transfer System - timing perspective"**

The Bunch-to-Bucket transfer is required among GSI and FAIR ring accelerators for different purposes. The FAIR Bunch-to-Bucket transfer is based on the existing technical basis at GSI, the low-level radio frequency (LLRF) system and the FAIR timing and control system. The FAIR B2B transfer is composed of two synchronization processes, the coarse and fine synchronization processes. The coarse synchronization realizes the phase alignment of the two rf systems of two rings. The fine synchronization process synchronizes the beam with the extraction and injection kicker magnets. The system can transfer primary beams within an upper bound time constraint of 10 ms and with an acceptable bunch-to-bucket injection center mismatch of  $\pm 1$  degree. In addition, it can also be applied for the transfer of secondary beams produced by targets. In this talk, the conceptual realization of the FAIR bunch-to-bucket transfer system, a systematic investigation from the beam dynamics, timing requirement of the transfer and kicker trigger perspectives will be introduced, as well as the application of the system for all FAIR use cases will be discussed.



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