MATTER AND TECHNOLOGIES

Contribution ID: **173** Type: **Poster ARD**

# Upgrade of the Periodic HTS Quadrupole Magnet for Operation Beyond 1 kA

*Monday 3 November 2025 18:55 (3 minutes)*

A periodic HTS quadrupole magnet demonstrator for compact beam transport lines has recently been developed and tested at KIT. The magnet is powered by pancake coils wound from 12-mm ReBCO tape and reached an operating current of 1 kA at 4.2 K. To enable stable operation at currents beyond 1 kA, an upgraded mechanical design has been introduced. This includes reinforced clamping, improved soldering, and enhanced thermal management, aimed at distributing forces more evenly and reducing mechanical stress, particularly at the coil interconnections.
During the disassembly of the previous bridge structure, mechanical damage to the coils was discovered. The coil winding is in progress, and experimental validation of the upgraded design is planned at liquid nitrogen and liquid helium temperatures.

## Speed talk:

Normal speed talk selection

**Author:** FATEHI, Samira (LAS, Karlsruhe institute of technology)

**Co-authors:** Dr GRAU, Andreas; BERNHARD, Axel (Karlsruhe Institute of Technology (KIT)); KRASCH, Bennet (Karlsruhe Institute of Technology); SAEZ DE JAUREGUI, David (KIT); Ms GLAMANN, Nicole; MUELLER, Anke-Susanne (KIT)

**Presenter:** FATEHI, Samira (LAS, Karlsruhe institute of technology)

**Session Classification:** Poster