

# GFA Accelerator Seminar

## Superconducting undulators at KIT

**NEW ! Monday, 8 October 2018, at 4pm, WBGB / 019**

### Dr. Sara Casalbuoni, KIT

Superconducting undulators (SCUs) can produce higher photon flux and can cover a wider photon energy range as compared to permanent magnet undulators (PMUs) with the same vacuum gap and period length. In addition, SCUs offer superior radiation hardness and therefore long-term stability in comparison to PMUs.

After introducing undulators and motivating the development of SCUs, the progress made in the last years by the collaboration between the Karlsruhe Institute for Technology (KIT) and Bilfinger Noell GmbH (Noell) to develop SCUs for present and future light sources will be presented. The first important milestone of the collaboration was reached in 2015, with the successful test of a full-scale planar SCU with 15 mm period length. The lessons learned have now been implemented in a new full-scale SCU with 20 mm period length which has reached series-production readiness.

The design of both SCUs, their installation and operation in a synchrotron light source will be described.

Afterwards, the talk will report on the progress achieved by the KIT in house development of: i) a SCU mockup with period length doubling, ii) a compact high temperature superconducting (HTS) tape stacked undulator for table top free electron lasers (FEL), iii) the instrumentation to characterize the magnetic field properties and to measure the beam heat load to a cold bore needed for the cryogenic design of SCUs.

For more details contact Marco Calvi, Tel. 5802