

Einladung zum Physikalischen Kolloquium

31.01.2025 **Frank Simon, Karlsruher Institut für Technologie**
**»High Rate and High Resolution -
Technology to explore the fundamental Constituents of the Universe«**
Einführung: G. Drexlin

The exploration of the fundamental constituents of the Universe has always been and continues to be a scientific endeavor at the very limit of technology - technology that define the sensitivity and performance of experiments and research facilities. Upgrades of existing experiments and the implementation of future projects requires technological advances, which enable handling higher rates and providing higher resolution on different levels. I will discuss two important directions in these developments - the push towards highest interaction rates and high granularity in calorimeters at the Large Hadron Collider and at a future Higgs Factory, and the drive towards ultimate resolution for future neutrino mass measurements with KATRIN using quantum sensors - and will present challenges common to both directions in the area of data readout and processing. At the example of highly granular calorimeters, the process from initial detector concepts to systems suitable for large-scale cutting-edge experiments will be illustrated to provide a perspective on the detector R&D process in particle and astroparticle physics experiments.

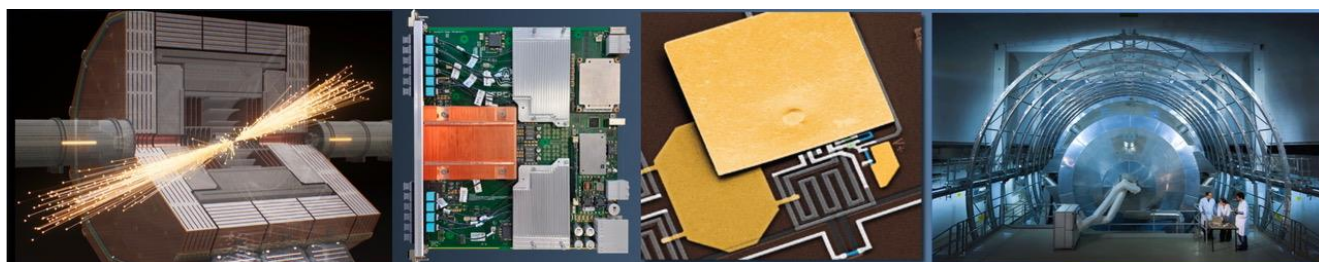


Figure: Illustration of a detector concept based on highly granular calorimetry and all-silicon tracking for FCC-ee, the Serenity board for the CMS Phase II DAQ, a Metallic Magnetic Calorimeter quantum sensor, the KATRIN experiment.

Der Vortrag findet **am Freitag, den 31. Januar 2025 um 15:45 Uhr im Otto-Lehmann-Hörsaal**, Physik-Flachbau (Geb. 30.22), KIT-Campus Süd statt.