

FAKULTÄT für PHYSIK
LUDWIG-MAXIMILIANS-UNIVERSITÄT
MÜNCHEN/GARCHING

PHYSIK-DEPARTMENT
TECHNISCHE UNIVERSITÄT MÜNCHEN
MÜNCHEN/GARCHING

MLL-KOLLOQUIUM

Donnerstag, 10.11.2016, 16¹⁵ Uhr

Hörsaal der LMU in Garching, Am Coulombwall 1
Treffen zum gemeinsamen Kaffee 16 Uhr

Prof. Christian Kiesling

(MPI f. Physik / LMU München)

A New Era of Flavor Physics: SuperKEKB and the Belle II Experiment

With the completion of the first-generation experiments (BaBar and Belle) at asymmetric e^+e^- -colliders studying CP violation in the B-meson system, a new era of high statistics flavor physics is at the horizon. We give a short introduction to the B-meson system and CP violation within the Standard Model, summarize the present experimental findings, and present the potential for searches of physics beyond the Standard Model at the upgraded KEKB machine in Japan ('SuperKEKB'). This machine will provide almost two orders of magnitude higher instantaneous luminosity compared to the world record collider KEKB. Concurrently with the construction of SuperKEKB, a massive detector upgrade ('Belle II') is carried out as well. In particular, the tracking detectors, the Central Drift Chamber and the Silicon strip vertex detector are being replaced. Due to the expected large occupancy close to the beam pipe, a pixel detector is mandatory at SuperKEKB for the precise vertex determination. We report on the design and construction of a unique silicon pixel detector for Belle II, coined 'PXD'. The PXD sensors are based on the DEPFET-technology, invented at the Max-Planck-Institute for Physics and exclusively produced at the Semi-Conductor Laboratory of the Max-Planck-Society. The PXD is developed within an international collaboration, dominated by German groups, with strong participation of the Excellence Cluster. The principles of the DEPFET technology will be explained as well as the construction of large self-supporting pixel matrices with an extremely small material budget. We show the various steps and tests towards the complete PXD system, expected to be ready for installation into Belle II by the summer of 2018.

gez. Peter Thirolf
Tel. 289-14064

gez. Norbert Kaiser
Tel. 289-12367