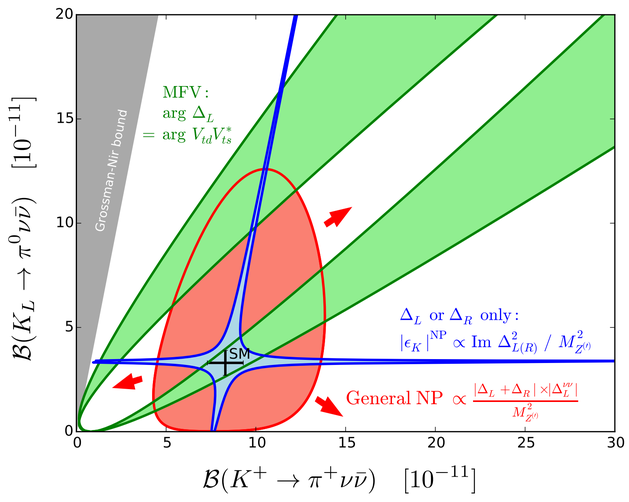
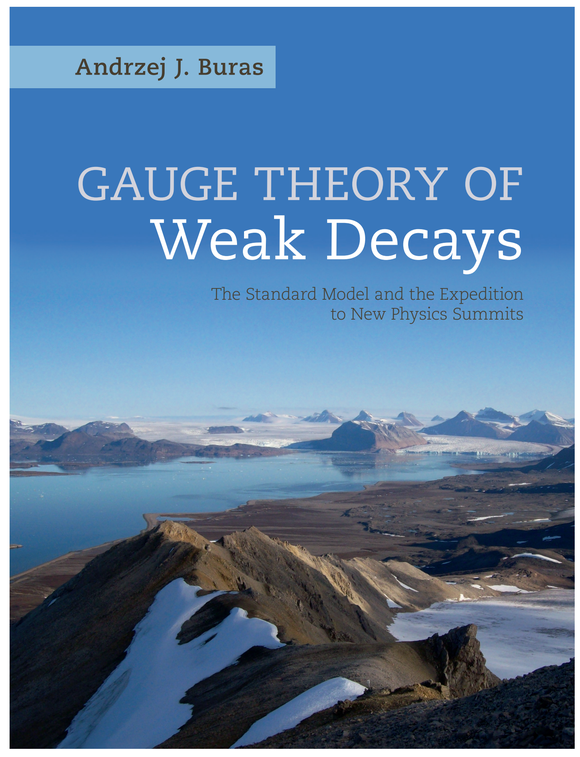
KCETA Colloquium

News from Flavour Expedition to the Zeptouniverse

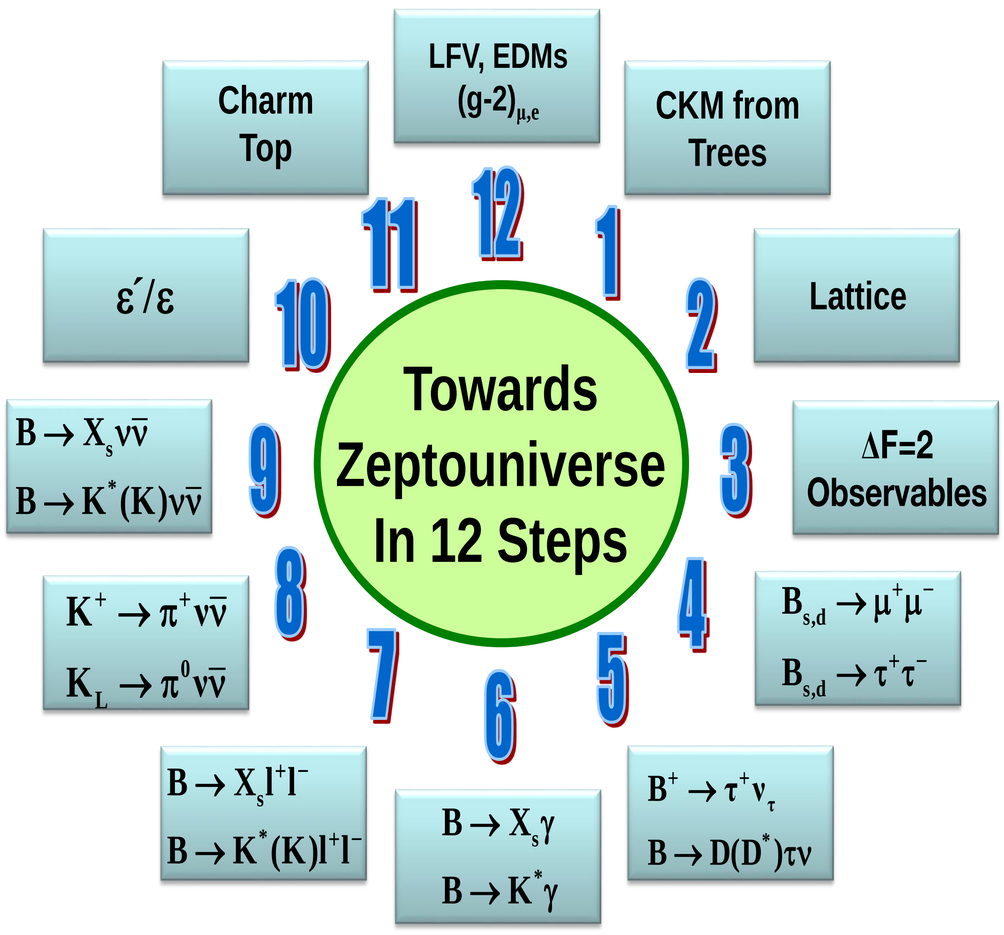
Thursday, 6th of July 2023
Kleiner Hörsaal A (CS) 15:45 - 17:00

Andrzej J. Buras
(TUM - Institute for Advanced Study)





After the completion of the Standard Model (SM) through the Higgs discovery in 2012 particle physicists are waiting for the discovery of new particles either directly with the help of the Large Hadron Collider (LHC) at CERN or indirectly through quantum fluctuations causing flavour changing rare processes to occur at different rates than predicted by the SM.
While the latter route is very challenging, requiring very precise theory and experiment, it allows a much higher resolution of short distance scales than it is possible with the help of the LHC. In fact in the coming flavour precision era, there is a good chance that we may get an insight into the scales as short as 10^{-21} m (Zeptouniverse) corresponding to energy scale of 200 TeV or even shorter distance scales.
The main strategies for reaching this goal will be explained in simple terms.
As this strategy requires very precise SM predictions for rare processes, I will report on recent strategies for the deterimination of the genuine SM predictions for all rare K and B decays without New Physics infection and without large uncertainties due to CKM elements V_{cb} and V_{ub} extracted from tree-level decays.
I will briefly summarize the present status of the anomalies in flavour observables concentrating on models with a new heavy Z' gauge boson. A brief outlook for the future of flavour physics will be given.



Please note: The colloquium will also be live-streamed to B401 SR 410 (CN).

KIT Center Elementary Particle and Astroparticle Physics (KCETA)
www.kceta.kit.edu

Karlsruher Institut für Technologie