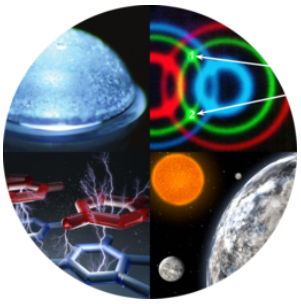

Münchner Physik-Kolloquium

at home! Winter 2021/22

Festkolloquium anlässlich der Max-Planck-Medaille

Flavour Expedition to the Zeptouniverse

Prof. Dr. Andrzej Buras, *Institute for Advanced Study, Technische Universität München*

Monday, 25 October 2021, 17:15 h
https://tum-conf.zoom.us/j/93234766313 Meeting-ID: 932 3476 6313 Password: Kolloquium
Please install the software in advance.

Rudolf-Mößbauer-Hörsaal, Physik-Department der TUM, James-Franck-Straße 1, Garching
Dieser Vortrag findet parallel vor Ort statt und wird von dort über Zoom übertragen. Für alle Anwesenden gilt die „3G“-Regel und Maskenpflicht.

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 certain rare processes with the change of quark flavour 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, in which the accuracy of the measurements of rare processes and of the relevant theory calculations will be significantly increased, 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. We will summarize the present status of deviations from SM predictions for a number of flavour observables and list prime candidates for new particles responsible for these so-called anomalies. A short outlook for coming years will be given.

Despite the fact that it is a physics colloquium I made an effort so that also non-physicists and non-scientists can follow partly this talk. In particular the first 15 min, the last 5 min and also some parts in the middle will be quite general.