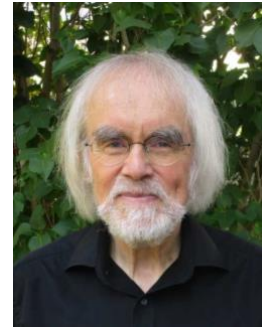


## PHYSIKALISCHES KOLLOQUIUM

*Vortrag:* **Prof. Andrzej J. Buras**  
Technische Universität München  
Institute for Advanced Study



*Thema:* **Flavour Expedition to the Zeptouniverse**

*Zeit und Ort:* Dienstag, 5.7.2022, 16:40 Uhr - Hybride Veranstaltung  
**Vortrag vor Ort in REC/C213**

Online Teilnahme möglich:

Zoom-Meeting: Meeting-ID: 624 5015 1234 / Kenncode: PK-22!-AB

<https://tu-dresden.zoom.us/j/62450151234?pwd=V0txdXp4WGN4eDN0SWZ4LzhXV2JvOT09>

*Leitung:* Prof. Dominik Stöckinger

*Kurzfassung:* 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.

*Biographie:* Andrzej Buras received his master's degree in theoretical physics at the Warsaw University in 1971. In 1972 he received his PhD at the Niels Bohr Institute in Copenhagen and worked as a post-doctoral fellow at this Institute until 1975. After a fellowship in the CERN theory group from 1975–1977, associate Scientist and staff member positions at Fermilab from 1977-1982, he was staff member of the MPI for Physics in Munich (1982–1988) and from 1988-2012 full professor in the Physics Department of the TUM. After his retirement in 2012 he moved to the TUM Institute for Advanced Study where he is leading the focus group 'Fundamental Physics'.

Mitglied von:



**DRESDEN  
concept**  
Exzellenz aus  
Wissenschaft  
und Kultur

A. Buras is known for his early work on strong-interaction effects (QCD) in deep-inelastic electron-proton and neutrino-proton scattering (1977–1980), which led to the commonly used  $\overline{\text{MS}}$  scheme for QCD calculations. But his most important contributions (1983–now) are in the field of weak decays of mesons; these include high order calculations of QCD effects in most important decays, the phenomenology of CP violation and of quark flavour physics in the Standard Model and in several New Physics models. A. Buras is an ordinary member of the Bavarian Academy of Sciences and foreign member of two academies in Poland. Among the awards most important are the ERC Advanced Grant (2011–2016) and the Max Planck Medal 2020 of the German Physical Society.