T 12: Theorie: Flavourphysik / Neutrinophysik

Zeit: Montag 16:00–17:45 Raum: Z6 - SR 1.010

T 12.1 Mo 16:00 Z6 - SR 1.010

Manipulating flavour models with invariants — •Wolfgang G. Hollik[1] and Ulises J. Saldana-Salazar[2] — [1]DESY, Hamburg, Germany — [2]TTP KIT, Karlsruhe, Germany

Quark and lepton mass matrices are unphysical in their full generality. We present a simple interpretation of mass matrix elements based on the trace invariant to reduce the initial arbitrariness. In this parametrization, we can reproduce certain popular flavour textures from an aligmnent mechanism. Similarly, slight misaligment easily reproduces Froggatt–Nielsen-like suppression factors without the need of a large scale hierarchy.

T 12.2 Mo 16:15 Z6 - SR 1.010

$D^0 \to KK^*$ as a discovery mode for charm CP violation — •Ulrich Nierste[1] and Stefan Schacht[2] — [1]Inst. f. Theor. Teilchenphysik, KIT, Karlsruhe — [2]Dipartimento di Fisica, Università di Torino und INFN, Sezione di Torino, Turin, Italien

CP violation in the charm system has not been observed yet. We argue that the decay mode $D^0 \to KK^*$ is very promising for a discovery, because the Standard Model permits a large CP asymmetry and the measurement requires no flavour tagging.

T 12.3 Mo 16:30 Z6 - SR 1.010

New Physics in $B \longrightarrow D^{(*)}\ell\bar{\nu}_\ell$ — •Kilian Lieret and Thomas Kuhr — LMU, Munich, Germany

Measurements of $B \longrightarrow D^{(*)}\ell\bar{\nu}_\ell$ branching fraction ratios currently challenge lepton universality and thus the Standard Model at a four sigma level. This talk focuses on how to discriminate between different kinds of possible new physics contributions. Based on the full angular distribution of the decay, several observables for different new physics scenarios are considered. Furthermore, we will reanalyze Belle I data in order to provide more specific distributions for phenomenological studies.

T 12.4 Mo 16:45 Z6 - SR 1.010

Pion light-cone distribution amplitude from data on pion form factors — •Aleksey Rusov, Alexander Khodjamirian, and Chan Cheng — University of Siegen

An accurate extraction of the pion light-cone distribution amplitude (LCDA) is important in the framework of different approaches such as Soft-Collinear Effective Theory (SCET), Light-Cone Sum Rules (LCSR), QCD factorization (QCDF).

We revisit the LCSRs for the spacelike electromagnetic pion and the $\pi\gamma^*\gamma$ form factors. The LCSR results are related with experimental data on these form factors at timelike region by means of a dispersion relation. This allows for extracting and constraining the Gegenbauer moments of the pion LCDA.

T 12.5 Mo 17:00 Z6 - SR 1.010

GUT Baryogenesis, Radiative Neutrino Mass and Scalar Dark Matter — •Sinan Zeissner — TU-Dortmund

We explore an interesting interplay between dark matter phenomenology, neutrino mass generation and baryogenesis in the context of the scotogenic model. In this model additional right-handed Majorana neutrinos can induce lepton number violating processes that can transform an original $B+L$ asymmetry into a $B-L$ asymmetry which later on is converted into a baryon asymmetry by sphaleron processes. The corresponding region in the parameter space also allows for the radiative generation of neutrino masses and dark matter production.

T 12.6 Mo 17:15 Z6 - SR 1.010

Type I Seesaw Neutrino Portal to Dark Matter — •Mathias Becker — TU Dortmund, Dortmund, Germany

The most popular model to explain the observed Dark Matter (DM) relic density assumes DM to couple to the SM via electroweak gauge interactions.

However, it is also possible that DM is an electroweak gauge singlet. In this case, to couple DM to the SM a mediator is required. One of the three renormalizable portal couplings is the neutrino portal, which also allows for the generation of the observed neutrino masses.

We explore neutrino portal DM, where the neutrino mass is generated by a type I seesaw mechanism and we investigate the case where the right handed neutrino is allowed to propagate in an extra dimension.

T 12.7 Mo 17:30 Z6 - SR 1.010

Neutrino oscillations in the presence of asymmetrically warped extra dimensions — •Dominik Döring — TU Dortmund, Dortmund, Germany

We study a brane model with a compactified and asymmetrically warped extra dimension. Two additional non-active neutrinos are introduced, one being responsible for neutrino mass generation, while the other is allowed to propagate in the extra dimension, leading to an alteration of the dispersion relation on the brane.

We discuss the shape of the Kaluza-Klein tower and explore the effects on active-sterile neutrino oscillations in this model, making a connection to previous semi-classical asymmetric warping models.