

FAKULTÄT für PHYSIK  
LUDWIG-MAXIMILIANS-UNIVERSITÄT  
MÜNCHEN/GARCHING

PHYSIK-DEPARTMENT  
TECHNISCHE UNIVERSITÄT MÜNCHEN  
MÜNCHEN/GARCHING

## MLL-KOLLOQUIUM

Donnerstag, 08.11.2018, 16<sup>15</sup> Uhr

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

**Dr. Daniel Greenwald**

(Physik-Department E18, TU München )

### Searching for CP violation in unexpected places

The Sakharov conditions tell that violation of the combined symmetry of charge conjugation (C) and parity (P) is necessary for creating a matter-antimatter asymmetry of the universe. One needs CP violation to live in a matter universe instead of just a bath of radiation. Unfortunately, the standard model of particle physics does not predict enough CP violation to create the matter-antimatter asymmetry that we observe. We therefore search for new sources of CP violation beyond those of the standard model. Two ideal places to look are in the decays of charmed mesons and tau-leptons where the standard model predicts CP conservation. I will present an introduction to CP violation in this context and an overview of our efforts to measure new sources of it, with data from the Belle experiment at the KEKB  $e^+e^-$  collider in Tsukuba, Japan. These concern several singly-Cabibbo-suppressed decays of charmed mesons, including our recently published results for the decay of  $D^+ \rightarrow \pi^+\pi^0$ , and hadronic decays of the tau lepton in the light of recently published results that are at odds with the standard model.

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