

FAKULTÄT für PHYSIK
LUDWIG-MAXIMILIANS-UNIVERSITÄT
MÜNCHEN/GARCHING

PHYSIK-DEPARTMENT
TECHNISCHE UNIVERSITÄT MÜNCHEN
MÜNCHEN/GARCHING

MLL-KOLLOQUIUM

Donnerstag, 17.10.2019, 16¹⁵ Uhr

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

Dr. Misha Gorshteyn

(Institute of Nuclear Physics, University of Mainz)

Precise hadron structure for low-energy tests in the electroweak sector

In view of apparent incompleteness of the Standard Model (SM), ongoing searches for new particles and interactions proceed at colliders, in astrophysics and at low energies. The latter avenue aims at extracting information on New Physics (NP) by confronting high-precision measurements of parameters of SM to equally precise theoretical calculations. Relative $\sim 10^{-4}$ measurements of the weak mixing angle in parity-violating electron scattering, and of CKM unitarity in the top row with beta-decays, are sensitive to light dark sector, as well as to heavy new particles at scales ~ 50 TeV, and represent a valuable complementarity to collider searches. This precision is warranted by a careful assessment of one-loop SM radiative corrections, most notably the electroweak box diagrams which include effects of the strong interaction in the non-perturbative regime and represent the main source of the theoretical uncertainty. I review the current status of the theoretical calculations and make connection to existing and upcoming electron and neutrino scattering data that allows for a controlled and largely model-independent assessment of the theoretical uncertainty.

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