

FAKULTÄT für PHYSIK  
LUDWIG-MAXIMILIANS-UNIVERSITÄT  
MÜNCHEN/GARCHING

PHYSIK-DEPARTMENT  
TECHNISCHE UNIVERSITÄT MÜNCHEN  
MÜNCHEN/GARCHING

## MLL-KOLLOQUIUM

Donnerstag, 16.10.2014, 16<sup>15</sup> Uhr

Seminarraum 127, TUM, Physik II, Erdgeschoss/Nord  
Treffen zum gemeinsamen Kaffee 16 Uhr

Dr. Ina Lorenz

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### Reduction of the proton radius discrepancy by 3 sigma: Systematic Effects and Theoretical Constraints

We discuss two main improvements in the determination of the nucleon electromagnetic form factors (NFF) from electron-proton scattering. On the one hand, we analyze the two-photon exchange corrections to the elastic electron-proton scattering cross sections including the Delta resonance as an intermediate state with realistic transition vertices. In particular, the impact of realistic NFFs on these calculations is illustrated. On the other hand, the relevance of theoretical constraints from analyticity and unitarity for the extraction of such realistic NFFs is discussed regarding parametrizations based on dispersion relations and conformal mapping techniques.

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