

FAKULTÄT für PHYSIK
LUDWIG-MAXIMILIANS-UNIVERSITÄT
MÜNCHEN/GARCHING

PHYSIK-DEPARTMENT
TECHNISCHE UNIVERSITÄT MÜNCHEN
MÜNCHEN/GARCHING

MLL-KOLLOQUIUM

Donnerstag, 29.10.2015, 16¹⁵ Uhr

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

Dr. Jacobo Ruiz de Elvira

(Helmholtz-Institut f. Strahlen- und Kernphysik, Univ. Bonn)

Precise determination of pion-nucleon scattering amplitudes and the nucleon sigma-term

In this talk we will review how the fruitful combination of dispersion-theoretical methods, in particular in the form of Roy-Steiner equations, allows for a precise determination of pion-nucleon scattering at low energies. Then, we will discuss the extraction of the nucleon σ -term via the Cheng-Dashen low-energy theorem, including also isospin-breaking corrections, to obtain a precision determination consistent with all constraints from analyticity, unitarity, crossing symmetry, and pionic atom-data. Finally, we will perform the matching to chiral perturbation theory in the subthreshold region and detail the consequences for the chiral convergence of the threshold parameters and the nucleon mass.

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