

HK 60: Eingeladene Hauptvorträge

Zeit: Donnerstag 8:30–10:30

Raum: HSZ-02

Hauptvortrag HK 60.1 Do 8:30 HSZ-02
Investigating the charge of the proton — ●MICHAEL KOHL for the OLYMPUS-Collaboration — Hampton University and Jefferson Lab, Virginia, USA

It has been known from the beginnings of electron scattering that the electric charge of the proton is not pointlike. The elastic form factors characterize the distributions of charge and magnetization in momentum space and are important input for calculations of strong interaction phenomena and nuclear structure. With improvements in experimental techniques and higher precision, data have shown inconsistencies when analyzed in the single-photon exchange approximation, generating a large uncertainty particularly for the proton charge form factor at high momentum transfer. Previously neglected higher-order radiative corrections have been favored for an explanation. To quantify the role of two-photon exchange is the main purpose of the OLYMPUS experiment at DESY. In the static limit, the elastic charge form factor is related to the root-mean-square charge radius, which can also be determined from atomic hydrogen spectroscopy. Recent measurements of the proton charge radius from elastic electron scattering and from the Lamb shift in muonic hydrogen have generated the so-called proton radius puzzle. I will give an overview on the current data landscape and discuss present and future efforts to resolve the pending puzzles of the proton form factors and the proton charge radius.

Hauptvortrag HK 60.2 Do 9:10 HSZ-02

Hadronenphysik mit COMPASS — ●JAN FRIEDRICH — Physik-Department Technische Universität München

Der Vortrag zieht Bilanz aus einem Jahrzehnt Hadronenphysik mit COMPASS. Die wichtigsten Erkenntnisse aus der tiefinelastischen Myonstreuung, sowie zu Hadronresonanzen in diffraktiven und durch Photonaustausch induzierten Hadron-Kern-Streureaktionen werden vorgestellt, und der Einfluss auf das Verständnis der starken Wechselwirkung diskutiert. Im Ausblick wird auch das Physikprogramm von COMPASS-II umrissen.

Hauptvortrag HK 60.3 Do 9:50 HSZ-02
The Mesa accelerator — ●KURT AULENBACHER, MARCO DEHN, ROBERT HEINE, and HANS-JOCHEN KREIDEL — Institut für Kernphysik der Universität Mainz

The Mainz Energy Recovering Superconducting Accelerator (Mesa) will be used to explore scattering reactions on windowless targets, i.e. under extremely low background conditions. In our case, the energy recovery linac principle allows for stationary conditions in single pass operation at low beam energies in the 100 MeV range. Mesa allows for sufficient luminosity due to its 1MegaWatt of beam power. Due to energy recovery, only 50 kW occur as real load on the RF-system. The machine will also be used as a conventional c.w. accelerator for a precision measurement of the electro weak mixing angle.