

HK 47: Fundamental Symmetries I

Time: Thursday 14:30–15:30

Location: SR 0.01 Erw. Physik

Group Report HK 47.1 Thu 14:30 SR 0.01 Erw. Physik
Latest update from the Muon g-2 experiment — ●RENÉ REIMANN and MARTIN FERTL for the Muon g-2-Collaboration — Institute of Physics and Excellence Cluster PRISMA+, Johannes Gutenberg University Mainz, 55099 Mainz, Germany

The magnetic moment anomaly of the muon, that relates the cyclotron and spin precession frequency, provides one of the most stringent tests of the Standard Model of Particle Physics since it is measured and theoretically predicted to very high precision. The Fermilab Muon g-2 collaboration ended data taking in summer 2023 after reaching its design goal in terms of recorded statistics. The final result of the Fermilab Muon g-2 experiment will be a long-standing reference for theory calculations in the next decades. Analysis of the last three years of data is wrapping up and will improve the 200ppb uncertainty from measurement campaigns 1-3. In this talk we will update on the latest progress towards the final result of the muon g-2 experiment.

Group Report HK 47.2 Thu 15:00 SR 0.01 Erw. Physik

Search for Charged Lepton Flavor Violation with the Mu2e experiment at Fermilab — ●ANNA FERRARI, STEFAN E. MUELLER, OLIVER KNODEL, and REUVEN RACHAMIN for the Mu2e-Collaboration — Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany

The Mu2e experiment, which is currently entering the final construction phase at the Fermi National Accelerator Laboratory in USA, will search for the charged-lepton flavor violating neutrino-less conversion of negative muons into electrons in the field of an aluminum nucleus. A conversion signal would require physics beyond the Standard Model, and the aim of Mu2e is to reach a single-event sensitivity four order of magnitude better than previous experiments. This can be achieved through an efficient production and transport of the muon beam, a rigorous control of all backgrounds that could mimic the monoenergetic conversion electrons, and an accurate normalization of the signal events. The design and present status of the Mu2e experiment will be presented, while the muon beamline and the detector sub-systems are going towards the construction completion.