

T 48: Hauptvorträge IV

Zeit: Mittwoch 11:00–12:30

Raum: H01

Hauptvortrag

T 48.1 Mi 11:00 H01

The Quest for the Nature of Dark Matter: Direct Searches —•UWE G. OBERLACK — Institute of Physics & PRISMA⁺ Excellence Cluster, Johannes Gutenberg University Mainz

Non-baryonic Dark Matter is five to six times more abundant than "regular" baryonic matter in the universe. Evidence to this conclusion is multi-faceted and solid, ranging in scale from galaxies to the observable universe. Dark Matter is key to the formation of cosmic structure from an early smooth stage as witnessed by the Cosmic Microwave Background to the rich structures observed with galaxy surveys today. Yet, the nature of Dark Matter remains unknown.

Interpreted as a new type of particle, Dark Matter constitutes one of our most direct evidences for physics beyond the Standard Model. Weakly Interacting Massive Particles (WIMPs) describe a broad class of well-motivated Dark Matter candidates, left over as a thermal relic

from the early hot universe. Bound by the galactic gravitational potential, WIMPs carry velocities around $10^{-3} c$ and are expected to scatter off of atomic nuclei. Direct search experiments are searching for the minute signals from these nuclear recoils with low-background detectors underground. The range of WIMP masses being tested through their keV-size spectra extends from the sub-GeV to the ~ 10 TeV scale. This talk focuses on recent progress and future perspectives in the field.

Hauptvortrag

T 48.2 Mi 11:45 H01

Progress in QCD calculations and applications to LHC

•GIULIA ZANDERIGHI — Max-Planck-Institut für Physik, Föhringer Ring 6, 80805 München

This talk reviews the exciting progress achieved in recent years in the context of precision calculations for the LHC, and the impact of this progress for the upcoming Run III and High Luminosity program.