

T 10: Eingeladene Vorträge IV

Zeit: Donnerstag 14:00–16:00

Raum: KGII-HS 2006

Eingeladener Vortrag T 10.1 Do 14:00 KGII-HS 2006
Neutrino-Massen und BSM-Physik — ●STEFAN ANTUSCH — MPI für Physik, München

Die in Neutrino-Oszillationsexperimenten beobachteten Neutrino-Massen erfordern eine Erweiterung des Standardmodells (SM) der Elementarteilchen. Für diese Erweiterung gibt es verschiedene Möglichkeiten, die sich beispielsweise darin unterscheiden, ob der Fermion- und/oder Higgs-Sektor des SM erweitert werden. Darüberhinaus motivieren weitere theoretische Überlegungen und experimentelle Resultate die Existenz von BSM-Physik (BSM = Beyond the SM), z. B. das Hierarchieproblem, das Flavourproblem, die Dunkle Materie oder die Materie-Antimaterie-Asymmetrie des Universums. Wir diskutieren die Rolle von Neutrinos in BSM-Physik im Spannungsfeld bevorstehender experimenteller Resultate des LHC sowie zukünftiger Neutrinoexperimente und kosmologischer Beobachtungen.

Eingeladener Vortrag T 10.2 Do 14:30 KGII-HS 2006
Supersymmetric dark matter — ●ALEJANDRO IBARRA — DESY Hamburg

Supersymmetric models provide very interesting candidates for the dark matter of the Universe. The nature of the dark matter is severely constrained by the requirement of a consistent thermal history of the Universe with successful Big Bang nucleosynthesis and successful baryogenesis. In this talk we review the constraints on the nature of the supersymmetric dark matter and we argue that all these constraints point to a scenario with gravitino dark matter and a small amount of R -parity violation. We also discuss possible signatures of this scenario

at gamma ray observatories and at colliders.

Eingeladener Vortrag T 10.3 Do 15:00 KGII-HS 2006
 α_s at the GUT scale to 3-loop accuracy — ●LUMINITA MIHAILA — Universität Karlsruhe

Supersymmetry (SUSY) is currently believed to play an important role in physics beyond the Standard Model (SM). In contrast to the SM, the particle content of the Minimal Supersymmetric Standard Model (MSSM) leads in a natural way to the unification of the three gauge couplings at a high energy scale $\mu \simeq 10^{16}$ GeV, in agreement with Grand Unification Theories (GUT).

In this talk, we report on the consistent evaluation to three-loop accuracy of the strong coupling α_s in the MSSM at the GUT scale from its value at M_Z . We find that the three-loop corrections are as large as, or even greater, than the effects induced by the current experimental accuracy of $\alpha_s(M_Z)$.

Eingeladener Vortrag T 10.4 Do 15:30 KGII-HS 2006
QCD on the lattice — ●ANDREA SHINDLER — University of Liverpool

QCD, the quantum theory of strong interactions, can be numerically solved, discretizing the space-time with a lattice. Over the last years several kinds of theoretical and algorithmic improvements have made it possible to have control over the statistic and systematic errors of the numerical simulations. Lattice QCD is thus a unique tool to compute phenomenologically relevant quantities and to understand the inner structure of the theory itself.