

T 16: Beyond the Standard Model (Theorie) II

Zeit: Dienstag 16:45–19:00

Raum: KGI-HS 1021

T 16.1 Di 16:45 KGI-HS 1021

Warped Higgsless Weak Boson Fusion — ●CHRISTOPH ENGLERT and DIETER ZEPPELFELD — Institut für Theoretische Physik, Universität Karlsruhe, D-76128 Karlsruhe

Warped Higgsless models provide an appealing approach to electroweak symmetry breaking (EWSB) that exhibit a specifically interesting phenomenology at the upcoming generation of colliders. At the LHC, particularly vector boson fusion (VBF) processes are sensitive to the mechanism of EWSB as they access longitudinal vector boson scattering via experimentally clear and distinct signatures, thus being potentially able to reveal the origin of EWSB in the near future. We present the VBF signatures of a typical Higgsless model with ideal fermion delocalization, focusing on gold- and silver-plated VBF channels at the LHC using a fully-flexible next-to-leading order QCD parton-level Monte-Carlo program.

T 16.2 Di 17:00 KGI-HS 1021

graviton production with 2jets at the lhc in large extra dimensions — KAORU HAGIWARA¹, PARTHA KONAR^{2,3}, MAWATARI KENTAROU⁴, ●QIANG LI³, and DIETER ZEPPELFELD³ — ¹kek theory division and sokendai, japan — ²high energy theory group, department of physics, university of florida, usa — ³institut fuer theoretische physik, universitaet karlsruhe, germany — ⁴school of physics, korea institute for advanced study, korea

we study seaching for kaluza klein graviton production in large extra dimension models via 2 jet plus missing transverse momentum signatures at the lhc. we present results for both the signal and the dominant $z\bar{z}$ and $w\bar{w}$ background in a perturbatively reliable way, ensured by a p_{Tmiss} dependent cut on the jet transverse momentum. the 2 jet results are compared with the 1 jet case. although the 2 jet results have slightly lower sensitivity to the scale of extra dimensions, the distributions of the two jets and their correlation with the missing transverse momentum provide additional evidence for the production of an invisible massive object.

T 16.3 Di 17:15 KGI-HS 1021

Collider phenomenology of a deconstructed higgsless model — THORSTEN OHL and ●CHRISTIAN SPECKNER — Institut für Theoretische Physik und Astrophysik, Universität Würzburg, Am Hubland, 97074 Würzburg

The dimensional deconstruction of higgsless models of electroweak symmetry breaking in higher dimensions is a convenient framework for the investigation of the phenomenology of such models. Furthermore, deconstructed models form by themselves an approach to model building beyond the standard model. We present the implementation of a particular example (the *Three-Site Higgsless Model*) in the Monte Carlo generator WHIZARD and show some results for the collider phenomenology of this model at the LHC.

T 16.4 Di 17:30 KGI-HS 1021

$T\bar{T}$ Bound States in Littlest Higgs Models at the LHC — ●ANA ALBOTEANU¹ and JOANNE L. HEWETT² — ¹Theoretische Physik 1, Universität Siegen — ²Stanford Linear Accelerator Center, Stanford University

From recent $D^0\bar{D}^0$ -mixing results we infer that the lifetime of the vectorlike top T in Little Higgs models may be large enough in order to allow for the formation of a bound state. We study the formation of the lowest $T\bar{T}$ -onium states at the LHC and its possible decay modes and resulting signature.

T 16.5 Di 17:45 KGI-HS 1021

Excited hadrons in AdS/QCD — ●MICHAEL BEYER¹, WAYNE DE PAULA^{1,2}, HILMAR FORKEL³, and TOBIAS FREDERICO² — ¹U Rostock — ²ITA Sao Jose dos Campos — ³U Heidelberg

We construct an approximate holographic dual of QCD. Conformal symmetry breaking and other IR effects are described by deformations of the anti-de Sitter background metric. This framework allows us to reproduce the empirically found square-mass trajectories of universal slope for radially and orbitally excited hadrons. We furthermore investigate whether linear trajectories for excited mesons can be related to the area-law confinement criterion for the Wilson loop, and how to

obtain the underlying bulk metric as a solution of the five-dimensional Einstein equation.

[1] H. Forkel, M. Beyer, T. Frederico JHEP 0707:077, 2007.

T 16.6 Di 18:00 KGI-HS 1021

Topcolor mit flavor-neutralem Hyperladungssektor — ●FELIX BRAAM¹, MICHAEL FLOSSDORF¹, R. SEKHAR CHIVUKULA², ELIZABETH H. SIMMONS² und STEFANO DI CHIARA² — ¹Physikalisches Institut, Albert-Ludwigs-Universität Freiburg — ²Department of Physics and Astronomy, Michigan State University, East Lansing, USA

Technicolor und Extended Technicolor liefern eine dynamische Beschreibung der elektroschwachen Symmetriebrechung, sowie für das Auftreten kleiner Fermionenmassen. Im Rahmen dieser Modelle ist es jedoch schwierig die experimentell beobachtete Masse des Top-Quarks zu erklären. In "Topcolor assisted Technicolor" (TC2) Modellen unterliegt der Top-Sektor einer anderen Dynamik als die leichten Fermionen. Auf diesem Wege kann eine Topmasse der richtigen Größenordnung erzeugt werden. Die phänomenologischen Konsequenzen eines TC2-Modells mit flavor-neutralen Wechselwirkungen im U(1)-Eichsektor werden diskutiert.

T 16.7 Di 18:15 KGI-HS 1021

Elektroschwache Observablen im Hypercharge-Universal Topcolor Modell — ●MICHAEL FLOSSDORF¹, FELIX BRAAM¹, R. SEKHAR CHIVUKULA² und ELIZABETH H. SIMMONS² — ¹Physikalisches Institut, Albert-Ludwigs Universität Freiburg — ²Department of Physics and Astronomy, Michigan State University

Technicolor Modelle bieten eine attraktive Alternative zum Higgs-Sektor des Standardmodells. Neben den starken experimentellen Einschränkungen durch elektroschwache Präzisionsmessungen ist eine der Herausforderungen für Modelle dieser Art jedoch, das Unterdrücken von Flavor Changing Neutral Currents mit der dynamischen Generierung der großen Top-Quark Masse in Einklang zu bringen. Hier bilden sog. Topcolor Assisted Technicolor (TC2) Modelle einen Ausweg, indem die Masse des Top-Quarks durch das Einführen einer neuen Wechselwirkung generiert wird. In einem solchen Modell, Hypercharge-Universal Topcolor, werden die elektroschwachen Observablen berechnet und dann ein Fit an alle Z-Pol Daten von LEP durchgeführt. Im Gegensatz zu den bisher untersuchten TC2 Modellen mit nicht-universellem Hyperladungssektor, ermöglicht das Hypercharge-Universal Topcolor Modell einen guten Fit an die experimentellen Daten.

T 16.8 Di 18:30 KGI-HS 1021

Conformally invariant extensions of the Standard Model: theory and phenomenology — ●VIVIANA NIRO — Max-Planck-Institut fuer Kernphysik, Heidelberg, Germany

We consider conformally invariant theories with a hidden sector and we analyze how the electroweak symmetry breaking can arise through the conformal anomalies, that generate the Higgs mass term at the quantum level. The main features of the models are presented, as well as the main advantages with respect to the Standard Model. We discuss also the phenomenology connected with these models and the possibility to test them at the LHC.

T 16.9 Di 18:45 KGI-HS 1021

Indirect Detection of Gravitino Dark Matter with Broken R-parity — ●DAVID TRAN¹ and ALEJANDRO IBARRA² — ¹Universität Hamburg — ²DESY Hamburg

The gravitino is an interesting candidate for the cold dark matter of the Universe in models that predict it to be the lightest supersymmetric particle. However, the next-to-lightest supersymmetric particle may cause cosmological problems with big bang nucleosynthesis, unless a slight violation of R-parity is assumed. This non-conservation of R-parity makes the gravitino unstable. It remains a viable dark matter candidate, however, since the required smallness of the R-parity breaking and a suppression by the Planck mass result in gravitino lifetimes that are much longer than the age of the Universe. The instability of the gravitino also opens up the possibility of its indirect detection, as the decay products from gravitino decay might be observable in present and future experiments. The predicted fluxes have interesting qualitative features and may possibly account for observed excesses

in both the gamma-ray and the positron spectra.

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