CoDyCE - LIO international workshop on Fundamental Theories beyond the Standard Model

Rapport sur les contributions

https://indico.in2p3.fr/e/codyce6

ID de Contribution: **1** Type: **Non spécifié**

Registration

ID de Contribution: **2** Type: **Non spécifié**

Challenges and ideas behind a fundamental theory of nature: Realising the Wilson dream (Francesco Sannino)

lundi 2 octobre 2017 10:00 (45 minutes)

ID de Contribution: **3** Type: **Non spécifié**

Towards an asymptotically safe Standard Model (Steven Abel)

lundi 2 octobre 2017 14:30 (45 minutes)

I discuss recent and ongoing work which aims to embed the Standard Model within an asymptotically safe framework of known gauge Yukawa theories. It is shown that radiative symmetry breaking generically occurs in these models in much the same way as it does in the MSSM. I discuss how a natural assignment of SM matter fields points towards an extended Pati-Salam like structure

ID de Contribution: **4** Type: **Non spécifié**

Supersymmetric UV safety (Borut Bajc)

lundi 2 octobre 2017 15:30 (45 minutes)

I will review some recent developments in the search for supersymmetric candidates of UV safe theories. This includes examples in SQCD with adjoints, quivers, but also phenomenologically attractive grand unified theories like the minimal SO(10) with large representations. The test of UV-safety can potentially rule out some of these GUTs as possible high energy limits of the standard model.

ID de Contribution: **5** Type: **Non spécifié**

Conformal window 2.0 (Oleg Antipin)

mardi 3 octobre 2017 10:00 (45 minutes)

We extend the phase diagram of SU(N) gauge-fermion theories as function of number of flavours and colours to the region in which asymptotic freedom is lost. We argue, using large Nf results, for the existence of an ultraviolet interacting fixed point at sufficiently large number of flavours opening up to a second ultraviolet conformal window in the number of flavours vs colours phase diagram. We first review the state-of-the-art for the large Nf beta function and then estimate the lower boundary of the ultraviolet window. The theories belonging to this new region are examples of safe non-abelian quantum electro dynamics, termed here safe QCD. Therefore, according to Wilson, they are fundamental. An important critical quantity is the fermion mass anomalous dimension at the ultraviolet fixed point that we determine at leading order in 1/Nf. We discover that its value is comfortably below the bootstrap bound. We also investigate the abelian case and find that at the potential ultraviolet fixed point the related fermion mass anomalous dimension has a singular behaviour suggesting that a more careful investigation of its ultimate fate is needed.

ID de Contribution: **6** Type: **Non spécifié**

TBA (Wang Zhi-Wei)

mardi 3 octobre 2017 11:00 (30 minutes)

ID de Contribution: **7** Type: **Non spécifié**

TBA (Nicolas Bizot)

mardi 3 octobre 2017 14:30 (30 minutes)

ID de Contribution: **8** Type: **Non spécifié**

UV complete models and the Higgs as a partially composite particle (Alessandro Agugliaro)

mardi 3 octobre 2017 15:15 (30 minutes)

ID de Contribution: **9** Type: **Non spécifié**

Some Aspects of Higgs Particles in the Compact 341 model (Noureddine Mebarki)

mercredi 4 octobre 2017 10:00 (30 minutes)

Some aspects of the Higgs particle and decay modes at the LHC are studied in the context of the compact 341 model. Moreover, as a byproduct, Baryogenesis is also investigated within this model. The existence of a strong first order electroweak phase transition (EWPT) was shown and Higgs masses regions fulfilling the EWPT criteria are also discussed

Summary

ID de Contribution: **10** Type: **Non spécifié**

The production of additional bosons and the impact on the Large Hadron Collider (Alan Cornell)

mercredi 4 octobre 2017 10:45 (30 minutes)