

SEMINÁŘ OTF

**ADAM SMETANA**

(OTF ÚJF AVČR, ŘEŽ)

## **Dynamical electroweak symmetry breaking due to strong Yukawa interactions**

### **Abstrakt**

We present a new mechanism for electroweak symmetry breaking (EWSB) based on a strong Yukawa dynamics. We consider an  $SU(2)_L \times U(1)_Y$  gauge invariant model endowed with the usual Standard model fermion multiplets and with two massive scalar doublets. We show that, unlike in the Standard model, EWSB is possible even with vanishing vacuum expectation values of the scalars. Such EWSB is achieved dynamically by means of the (presumably strong) Yukawa couplings and manifests itself by the emergence of fermion and gauge boson masses and scalar mass-splittings, which are expressed in a closed form in terms of the fermion and scalar proper self-energies. The ‘would-be’ Nambu–Goldstone bosons are shown to be composites of both the fermions and the scalars. We give an evidence that a reasonable solution of Schwinger–Dyson equations for the self-energies exists.

Reference: P. Beneš, T. Brauner, A. Smetana - 0806.2565 [hep-ph]

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A. Ciepły/otf