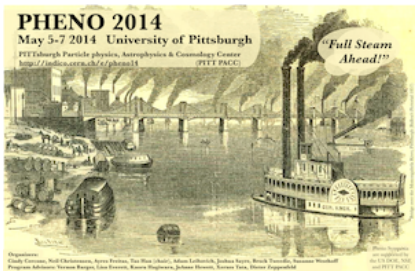

Contribution ID: **69** Type: **not specified**

Taming the Goldstone contributions to the Standard Model Higgs effective potential

Monday 5 May 2014 18:15 (15 minutes)

The vacuum expectation value of the Standard Model Higgs field can be computed in terms of the Lagrangian parameters using the effective potential. However, the perturbative calculation of the effective potential at any finite loop order contains problematic contributions from Goldstone bosons with small but non-zero field-dependent masses. As the field-dependent Goldstone boson mass approaches zero, these contributions to the effective potential minimization condition give a logarithmic divergence already at 2-loop order, and have power-law singularities at higher loop orders. I show how to resum these contributions to the effective potential to all orders in perturbation theory to obtain a simple, well-behaved result. I will also discuss the impact on the Standard Model Higgs effective potential minimization and the Higgs mass calculation.

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Session Classification: SM Higgs II