HEP 2013
Stockholm
18-24 July 2013

Contribution ID: **672** Type: **Talk presentation**

Beta-function for the Higgs self-interaction in the Standard Model at three-loop level

Friday 19 July 2013 16:00 (12 minutes)

The beta-function describing the evolution of the Higgs self-coupling is of special interest due to its close connection to the question of Vacuum Stability in the Standard Model.
With the finding of a Higgs candidate at 126 GeV this question has become one for precision physics as this value of the Higgs mass leads to a second minimum of the effective Higgs potential close to the Planck scale but nearly at the same energy level as the one at the Fermi scale.

In this talk an introduction to this problem and its connection to the evolution of couplings will be given.
Then the calculation and the results for the three-loop beta-function of the Higgs self-interaction will be presented.
Finally, the effect of these results on the evolution of this coupling and on the Stability problem will be analyzed for a 126 GeV Higgs boson.

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Session Classification: Higgs and New Physics

Track Classification: Higgs and New Physics