



Contribution ID: 170

Type: not specified

## SUSY QCD corrections to Higgs boson production via gluon fusion

*Thursday, 1 September 2011 14:30 (25 minutes)*

The MSSM scalar  $h$  and  $H$  production through gluon fusion is mediated by heavy quark and squark loops at LO. The NLO QCD corrections at two loops to the quark loops are known including mass effects since two decades, while those to the squark loops have been derived some time ago in the heavy squark mass limit first. However, for light stop masses below about 400 GeV, mass effects can become important. Their inclusion in the NLO calculation implied that they are of the order of 20% on top of the LO squark mass effects. In the next step we have calculated the full two-loop SUSY-QCD corrections including finite gluino and squark masses and mixing effects. The mass effects turn out to be important. First results of the complete NLO calculation within the MSSM shall be presented. The validity of approximations used in the cross section calculation will be discussed in view of these new results.

**Primary authors:** Dr RZEHAKE, Heidi (University of Freiburg); Dr SPIRA, Michael (Paul Scherrer Institute); Prof. MUEHLEITNER, Milada Margarete (Institute of Theoretical Physics (TP), Karlsruhe Institute of Technology)

**Presenter:** Prof. MUEHLEITNER, Milada Margarete (Institute of Theoretical Physics (TP), Karlsruhe Institute of Technology)

**Session Classification:** Parallel Session 9

**Track Classification:** SUSY: phenomenology