

NLO SQCD corrections to the decay $\tilde{t}_1 \rightarrow c\tilde{\chi}_1^0$

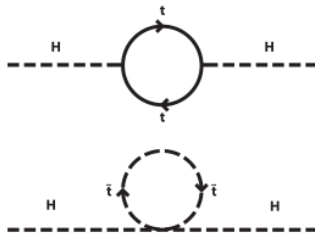
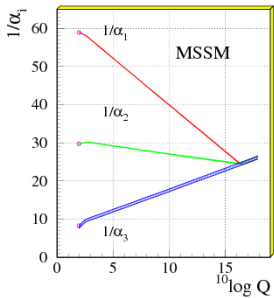
Jason Aebischer

In collaboration with A. Crivellin and C. Greub

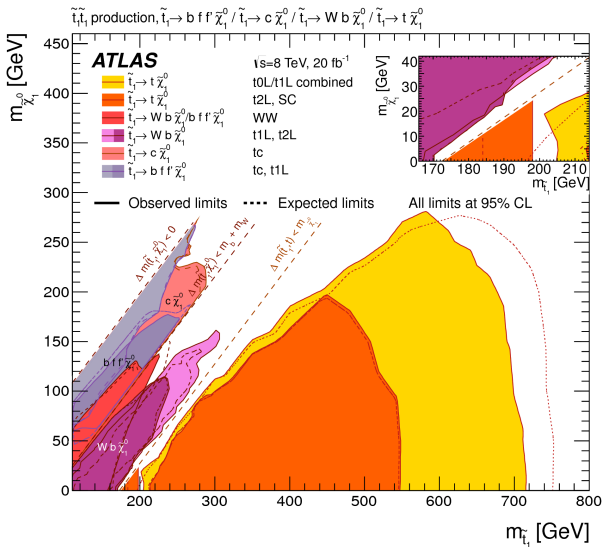
arXiv:1410.8459

Uni Bern

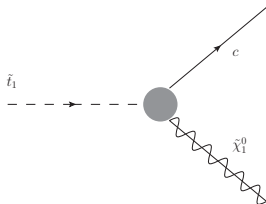
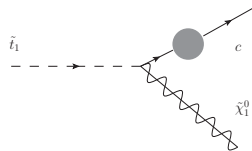
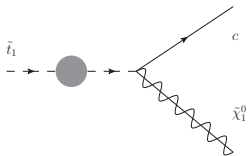
06.12.2015



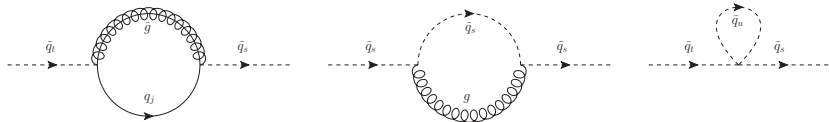
Scalar top search



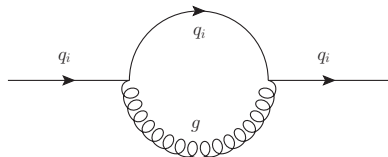
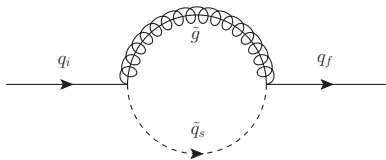
Virtual α_s -corrections to $\tilde{t}_1 \rightarrow c\tilde{\chi}_1^0$



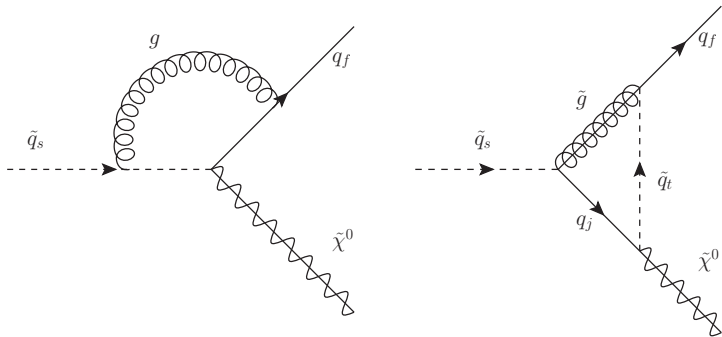
Squark self-energies



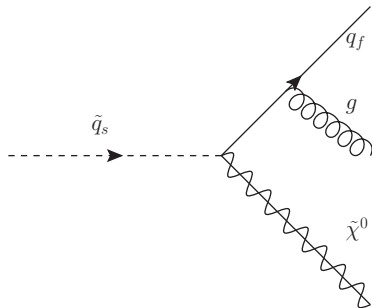
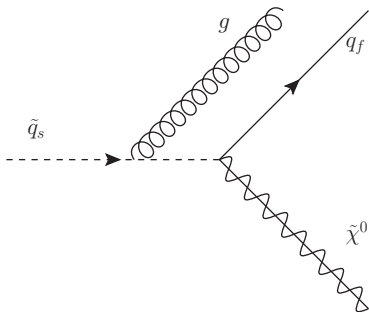
Quark self-energy



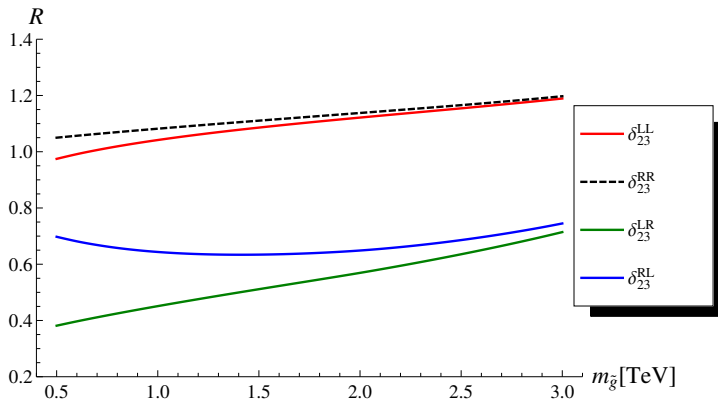
Genuine vertex corrections to $\tilde{t}_1 \rightarrow c\tilde{\chi}_1^0$



Real emission to $\tilde{t}_1 \rightarrow c\tilde{\chi}_1^0$: $\tilde{t}_1 \rightarrow c\tilde{\chi}_1^0 g$



1-loop corrections to the decay width



$$R := \frac{\Gamma^{\text{tree}} + \Gamma^{\text{1-loop}}}{\Gamma^{\text{tree}}}$$

Summary

Light scalar top quarks

Interesting physics

Important α_s -corrections

Up to 50 %

Future

Investigation of the mass shift $m_{\tilde{t}_1}^{OS} - m_{\tilde{t}_1}^{\overline{DR}}$