

HEAVY [SUSY] PAIRS PLUS JETS AT LHC

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Tev4LHC workshop

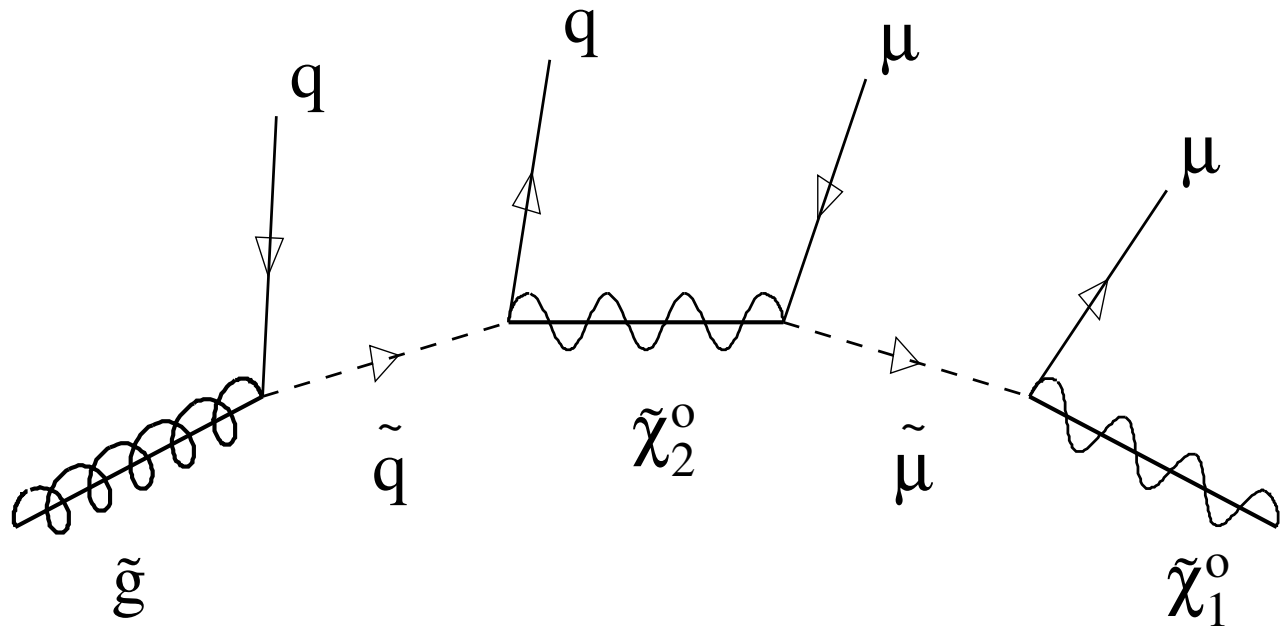
FNAL

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Goal: SUSY spectra via cascade decay kinematics

e.g. $\tilde{g} \rightarrow \tilde{q}\bar{q} \rightarrow \chi_2^0 q\bar{q} \rightarrow \mu^+ \mu^- q\bar{q} \chi_1^0$

for $m_{\tilde{g}} > m_{\tilde{q}}$



- q, \bar{q} will be hard jets

typical cuts: $p_T(j) > 150, 100, 50, 50$ GeV

courageous analyses: $p_T(j) > 100, 100, 40, 20$

- \tilde{q} decays contain one fewer hard jet

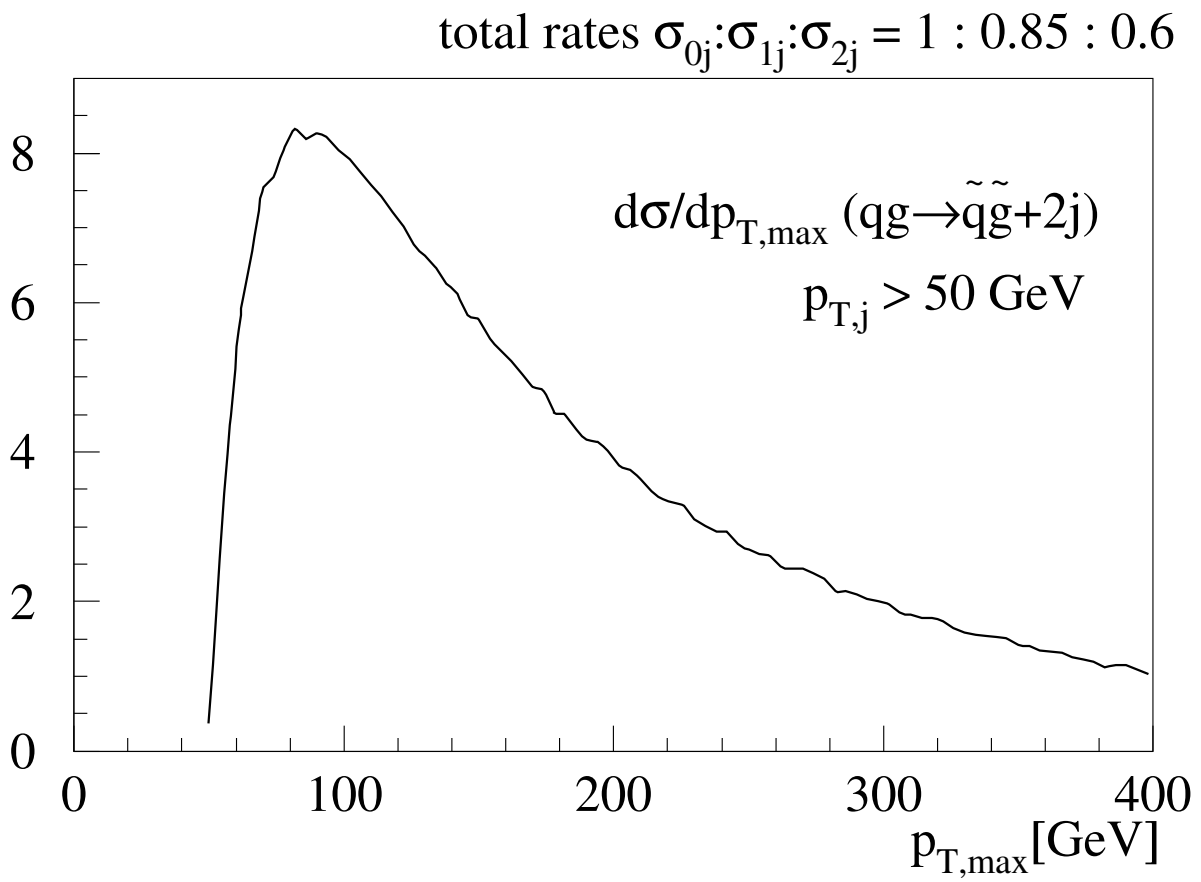
- ▶ separate $\tilde{g}\tilde{g}, \tilde{g}\tilde{q}, \tilde{q}\tilde{q}$ pair production samples via number of hard jets

Advanced SUSY phenomenology

Just completed: SUSY-MadGraph, tool for calculating MSSM matrix elements for collider processes [Cho, Hagiwara, Kanzaki, Plehn, DR, Stelzer]

► MSSM pair production plus hard jets: big implications for SUSY cascade decays @ LHC!

[T.Plehn & D.R., preliminary]



Possible Tevatron contribution:

Study heavy pairs plus jets to understand and improve combinatorics.

What heavy pairs available? $t\bar{t}$!

+1j,2j fractions much smaller,
but still useful after a few fb^{-1}