Squark Searches

R-parity Conservation

$$\tilde{q} \longrightarrow q\tilde{\chi}_1^o$$

- Analysis at 189 GeV : problems using skelana.

- First look at sbottom events with low masses at 189 GeV.

• Problems in skelana :

- Names of the STIC modules at 183 and 189 GeV : fixed in june.
- Bug in the last version (23 july 99) : No tracks with STIC informations.

• New cuts for DATA-MC agreement :

Preselection cuts :

- $E_t > 5$
- $E_{cone30}/E_{vis} < 0.7$
- At least one particle (charged or neutrals) with $P_t > 1.2$
- At least 6 charged particles

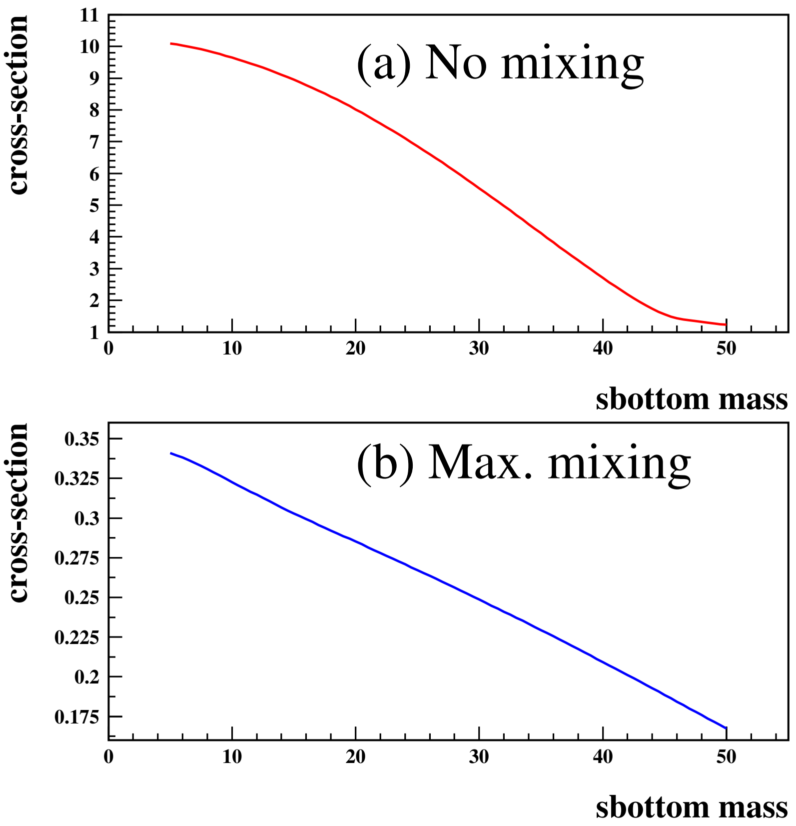
		DATA	MC	diff.
PRESELECTION		62568	63970	2.2 %
STEP 1	$P_t > 4.$	16389	15500	5.4 %
STEP 2	$\mid\cos(\theta_{Pmiss})\mid < 0.9$	8943	8772	1.9 %
STEP 3	$\mid\cos(\theta_{Trhust})\mid < 0.9$	7200	7061	1.9 %
STEP 4	$\sqrt{s'}/\sqrt{s} < 0.9$	3588	3456	3.7 %

• Non-degenerate mass-case, Generated points :

Using SUSYGEN3

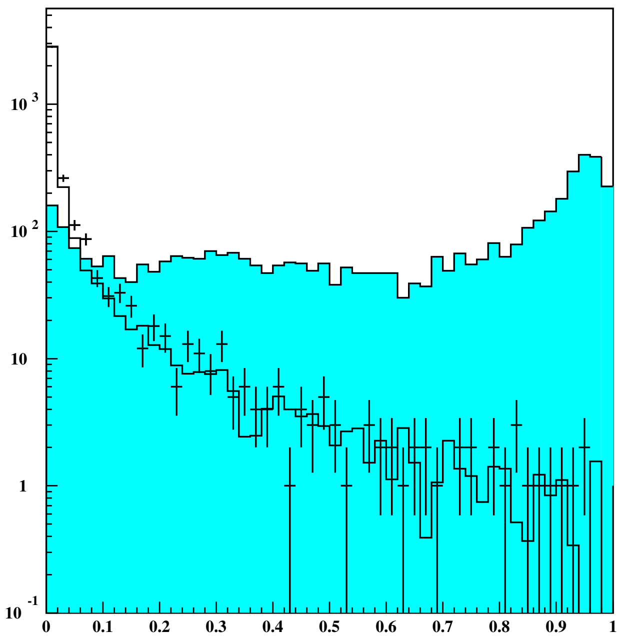
(10,0)
(20,0) (20,10)
(30,0) (30,10) (30,20)
(40,0) (40,10 (40,20) (40,30)

• Cross-sections :



• Neural network output :

Same neural network structure as before.



• Number of events :

Ndata = 4 , Nmonte-carlo = 3.1

• Efficiencies :

(10,0) : 3.6 %
(20,0) : 11.4 % , (20,10) : 16.0
(30,0) : 21.4 % , (30,10) : 22.8, (30,20) : 20.0
(40,0) : 20.4 % , (40,10) : 20.2, (40,20) : 24.0 ,(40,30) : 24.6

Conclusion

- Monte-Carlo agreement with data :
  - neutral energy.
  - $q\bar{q}\gamma$ and ISR.
  - $\gamma\gamma$ backgrounds.
- Low squark masses in the non-degenerate mass case :
  - The stop and sbottom analysis will be perfomed.
- Stop generator :
  - Hadronisation effects will be included in SUSYGEN for september, allowing to generate stop events with different values of the fragmentation parameter.