Squark Searches at 192-196 GeV

R-parity Conservation

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

Team B meeting summary on squark searches :

- Analysis at 189 GeV : problems using skelana.

Preliminary results at 192 and 196 GeV :

- $L_{192} = 23.6\ pb^{-1}$, $L_{196} = 17.46\ pb^{-1}$
- Results combining 184, 189, 192 and 196 data.

Analysis at 192 and 196 GeV

- Luminosities :
  - $L_{192} = 23.6\ pb^{-1}$
  - $L_{196} = 17.46\ pb^{-1}$
- MC used :
  - $q\bar{q}\gamma$ and WW excalibur at 196 GeV.
  - $\gamma\gamma$ backgrounds at 183 GeV.
  - all other necessary backgrounds at 189 GeV.
  - Stop and sbottom signals at 189 GeV have been used.
- Number of selected events :

	DATA	MC	DIFF.
192	1225	1232	0.6 %
196	877	911	3.9 %

- Neural Networks :

The neural networks have been trained with wrong $\gamma\gamma$ events (no energy in the STIC). The neural networks have been trained at 189 GeV and without further training, the method has been applied at 183, 192 and 196 GeV.

• Cuts on the NN outputs :

The same cuts as at 189 GeV have been perfomed, such that the signal efficiencies are the same. The efficiencies at $M_{squark} = 94$ GeV has been extrapolated to 96 GeV and 98 GeV.

• Number of events :

- At 192 GeV :

	$\tilde{b}_1 \Delta M > 30$	$\tilde{b}_1 \Delta M < 30$	$\tilde{t}_1 \Delta M > 30$	$\tilde{t}_1 \Delta M < 30$
DATA	0	0	1	1
MC	0.36	0.43	1.58	0.43

- At 196 GeV :

	$\tilde{b}_1 \Delta M > 30$	$\tilde{b}_1 \Delta M < 30$	$\tilde{t}_1 \Delta M > 30$	$\tilde{t}_1 \Delta M < 30$
DATA	0	0	0	0
MC	0.26	0.32	1.17	0.314

Conclusion

- These results are very preliminary.
- Results for $\Delta M > 15$:

	M_{stop} No mixing	M_{stop} Max. mixing
Obtained	≥ 89	≥ 86
Expected	≥ 88	≥ 83

	$M_{sbottom}$ No mixing	$M_{sbottom}$ Max. mixing
Obtained	≥ 91	≥ 79
Expected	≥ 90	≥ 74

Improvement from 1 to 3 GeV using this year data.