INTRODUCTION

gluino search from stop decay

$$\tilde{t}_1 \rightarrow \mathbf{c}\tilde{g} \;,\; \tilde{g} \rightarrow R^{\pm}$$

- **Improvement in the Charged R-hadrons search at 189 GeV**
- **DE/dx calibration**
- **Charged R-hadrons search in 2000 data**
- **Preliminary results**

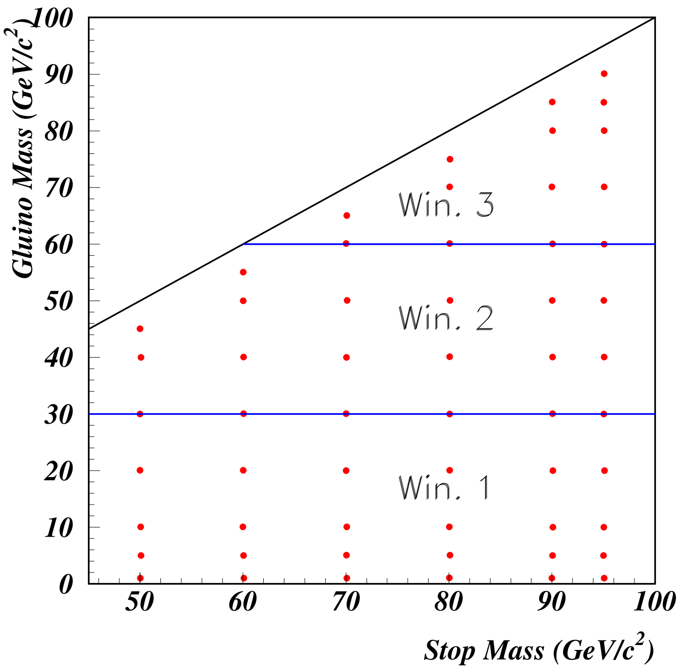
Gluino search

- **The R-hadron search is performed in the SUSANA framework**

Preselection:

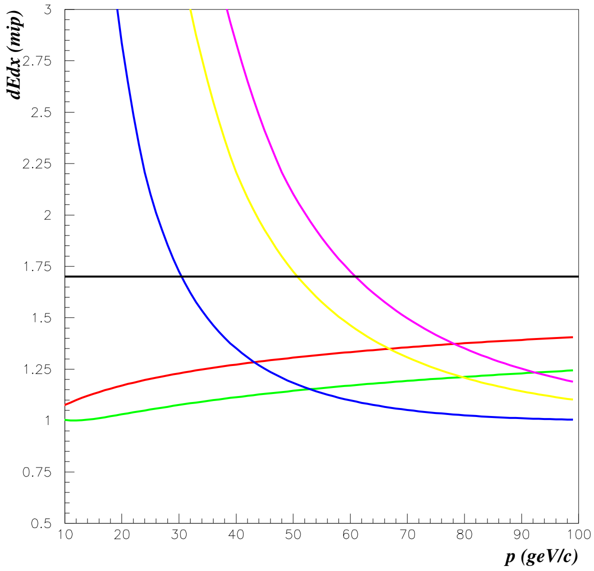
- $E_t > 4$, **4 TPC tracks, 1 track** $P_t^{ch} > 1.5$
- **Electromagnetic energy** $\leq$ **140** GeV
- $|cos(\theta thrust)| < 0.88$
- **at least 2 charged tracks with: (also HIP candidate preselection)**
  - $|P| \geq 10$ GeV$/c$
  - **recontructed using the TPC**
  - **at least 80 wires to measure the dE/dx**
  - **Cut on quality flag from bbdedx**
- **dE/dx correction factor:**
  dE/dx (data 98) / 0.955

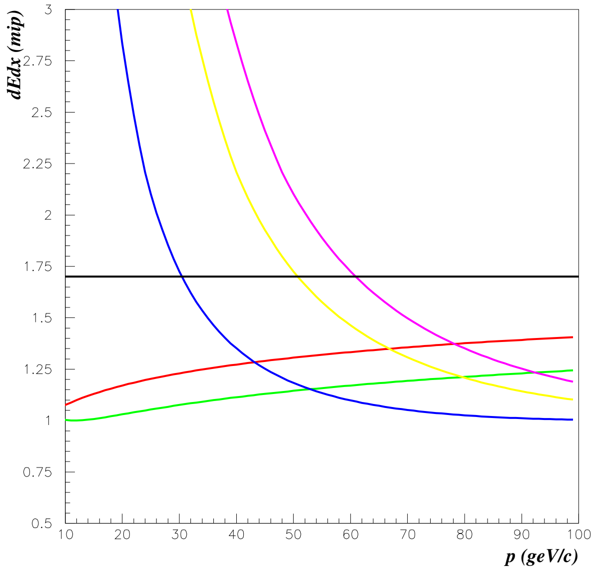
Gluino search

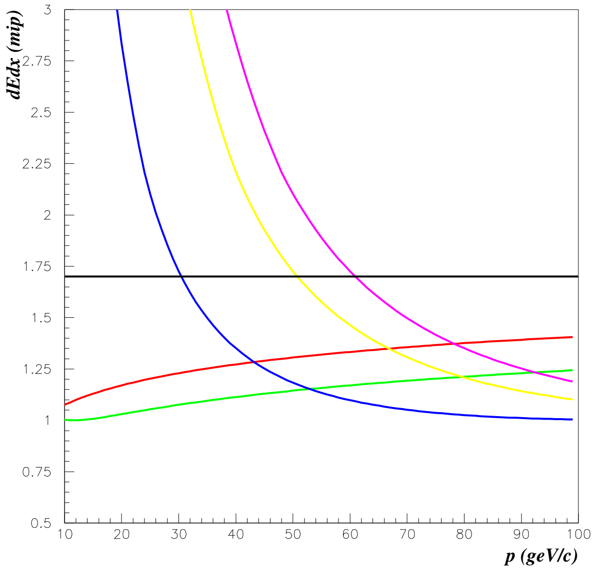


- **Window 1:** $M_{\tilde{g}} \leq$ **30** GeV/c^2
  - **Single TAG: at least 1 HIP candidate with** $|P| \geq$ **20** GeV/c**and dE/dx** $\leq$ **dE/dx(M=3** GeV/c^2**).**
- **Window 2: 30** GeV/$c^2 <$ $M_{\tilde{g}} <$ **60** GeV/c^2
  - **Double TAG: at least 2 HIP candidates with dE/dx** $\geq$ **1.7 or below dE/dx(M=1** GeV/c^2**) in the region between dE/dx(M=30** GeV/c^2**) and dE/dx(M=60** GeV/c^2**)**
- **window 3:** $M_{\tilde{g}} \geq$ **60** GeV/c^2
  - **Double TAG: at least 2 HIP candidates with dE/dx** $\geq$ **1.7 and** $\geq$ **dE/dx(M=50** GeV/c^2**)**

Gluino search



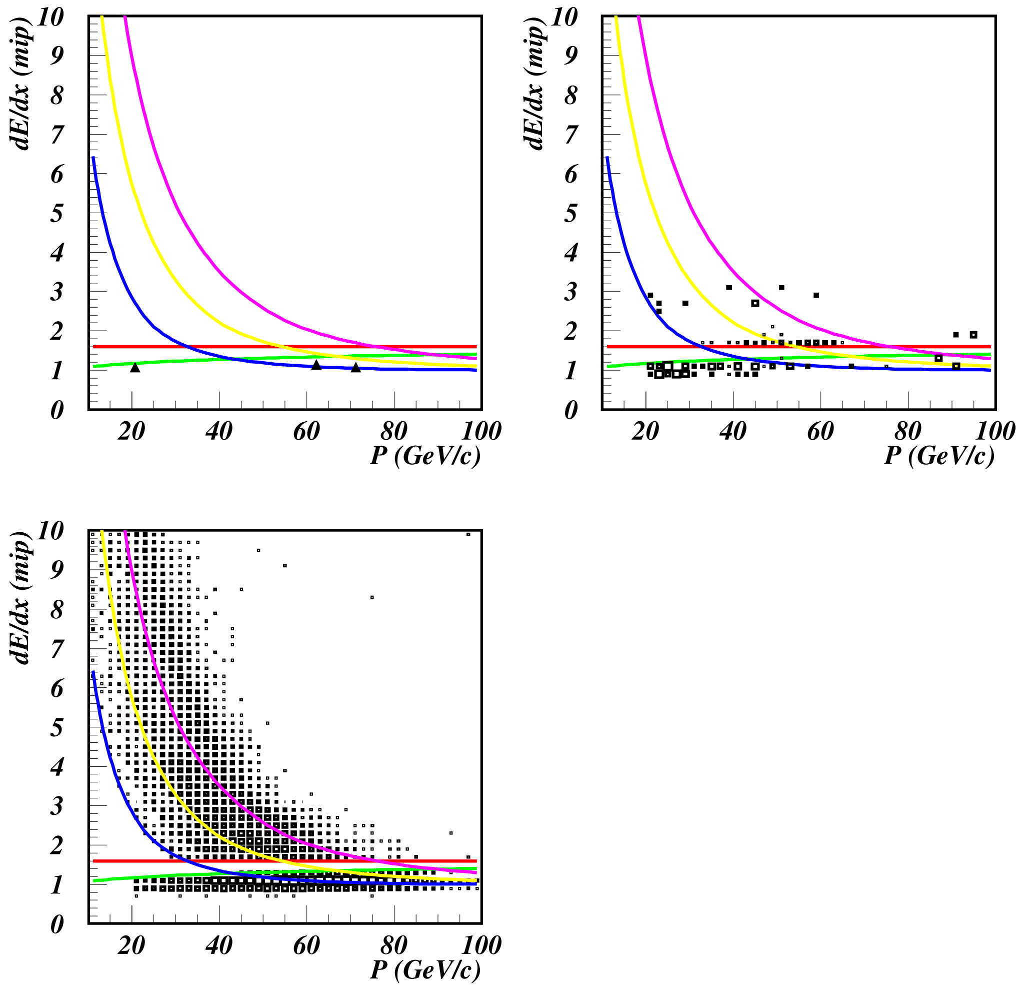




Gluino search

Results at 189 GeV

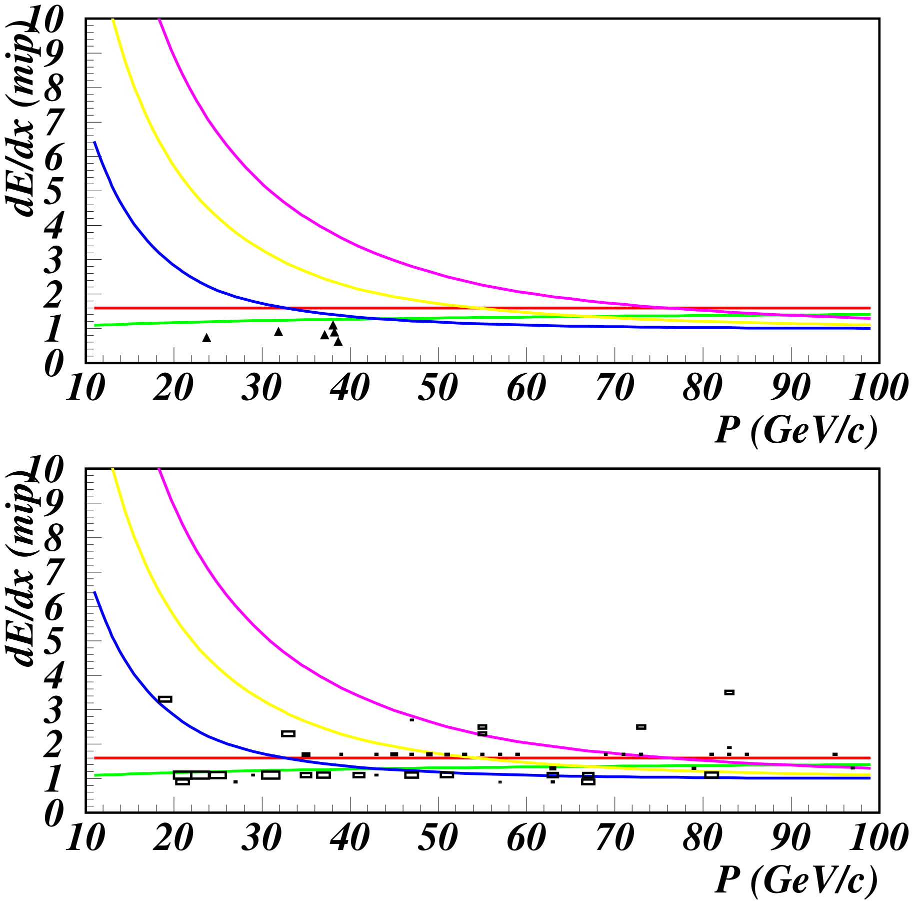
- Window 1: **Ndata = 3 , Nmc = 3.95 ± 0.68**
- Window 2: **Ndata = 0 , Nmc = 0.28 ± 0.11**
- Window 3: **Ndata = 0 , Nmc = 0.35 ± 0.19**



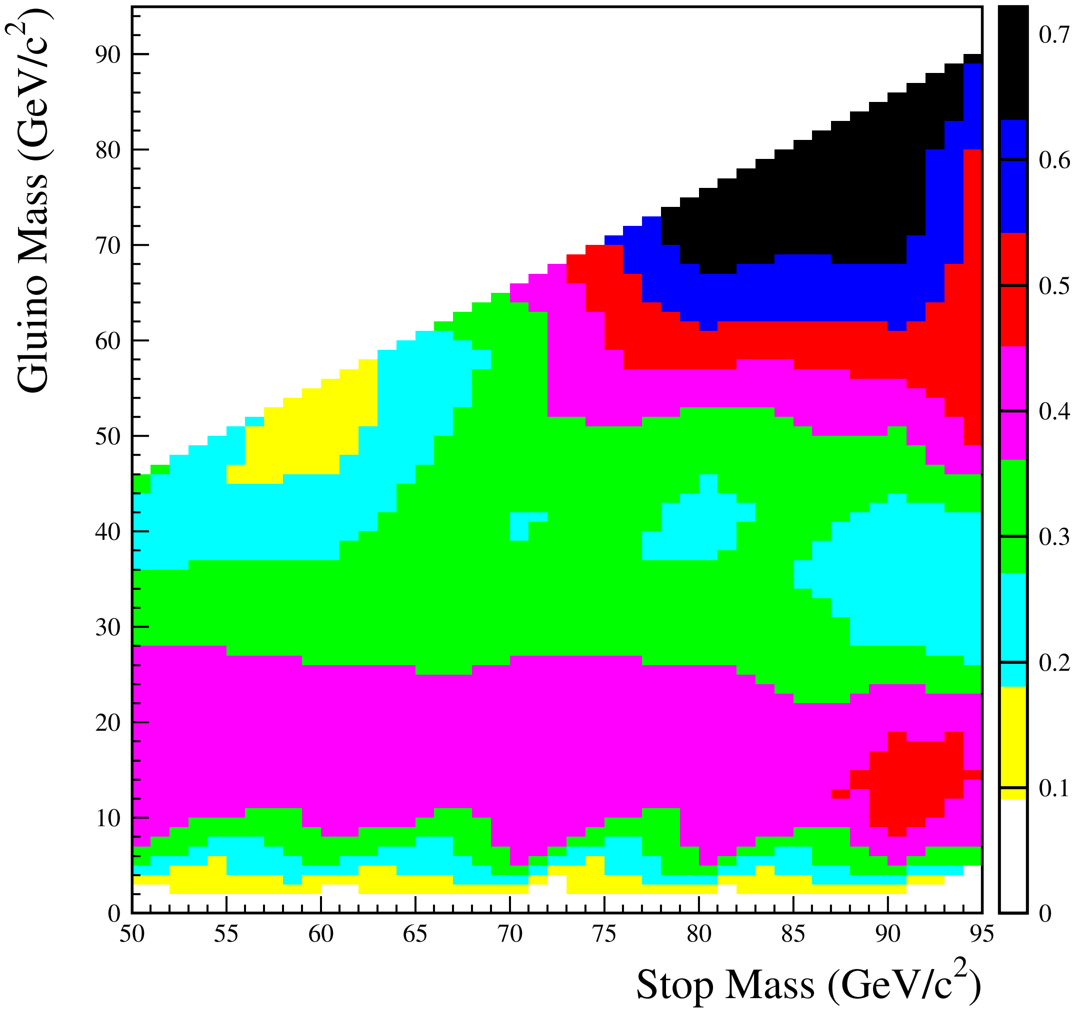
Gluino search

2000 data

- Window 1: Ndata = 6 , Nmc = 0.56 ± 0.13
  5 in Sector 6
  Window 1: Ndata = 1 , Nmc = 0.47 ± 0.12
- Window 2: Ndata = 0 , Nmc = 0.05 ± 0.03
- Window 3: Ndata = 0 , Nmc = 0.03 ± 0.02

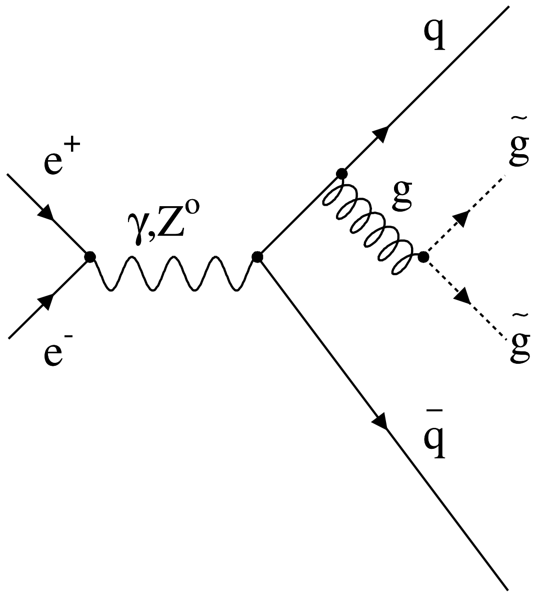


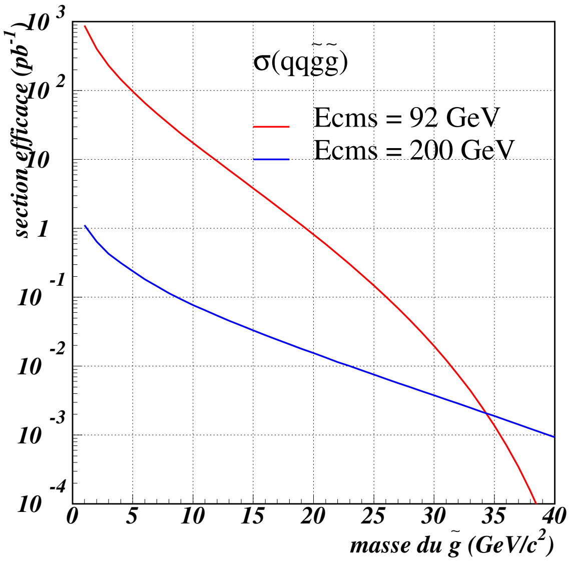
Efficiencies: Signal at 200 GeV



Gluino search at LEP1

- Independant from other sparticles.
- Need to go back to LEP 1.





- The generator is ready
  - Matrix element calculation using helicity amplitudes method. (Original code from Jack Gunion)
  - Gluino hadronisation into R-hadrons ($R^{\pm}$, R^o).
  - R-hadrons simulated as K^o_L and muons

Signal simulation is almost ready. Still some problems with DELANA

Conclusion

Status for summer conferences

2 analysis in progress:

- **Stop pair production and decay:** $\tilde{t}_1 \rightarrow \mathbf{c}\tilde{g}$ **from 189 to** $\sim$**208** GeV
  - **Charged R-hadrons production**
  - **Neutral R-hadrons production**
  - **taking into account Branching ratios**
- **gluon splitting:** $e^+e^- \rightarrow q\bar{q}\tilde{g}\tilde{g}$ **at LEP1**