$\mathbf{D^*}$ Selection

$$c \to D^{*+} \to D^0\pi^+ \quad (D^0 \to K^-\pi^+)$$

BR($D^{*+} \to D^0\pi^+$) BR($D^0 \to K^-\pi^+$) $= 0.0262$

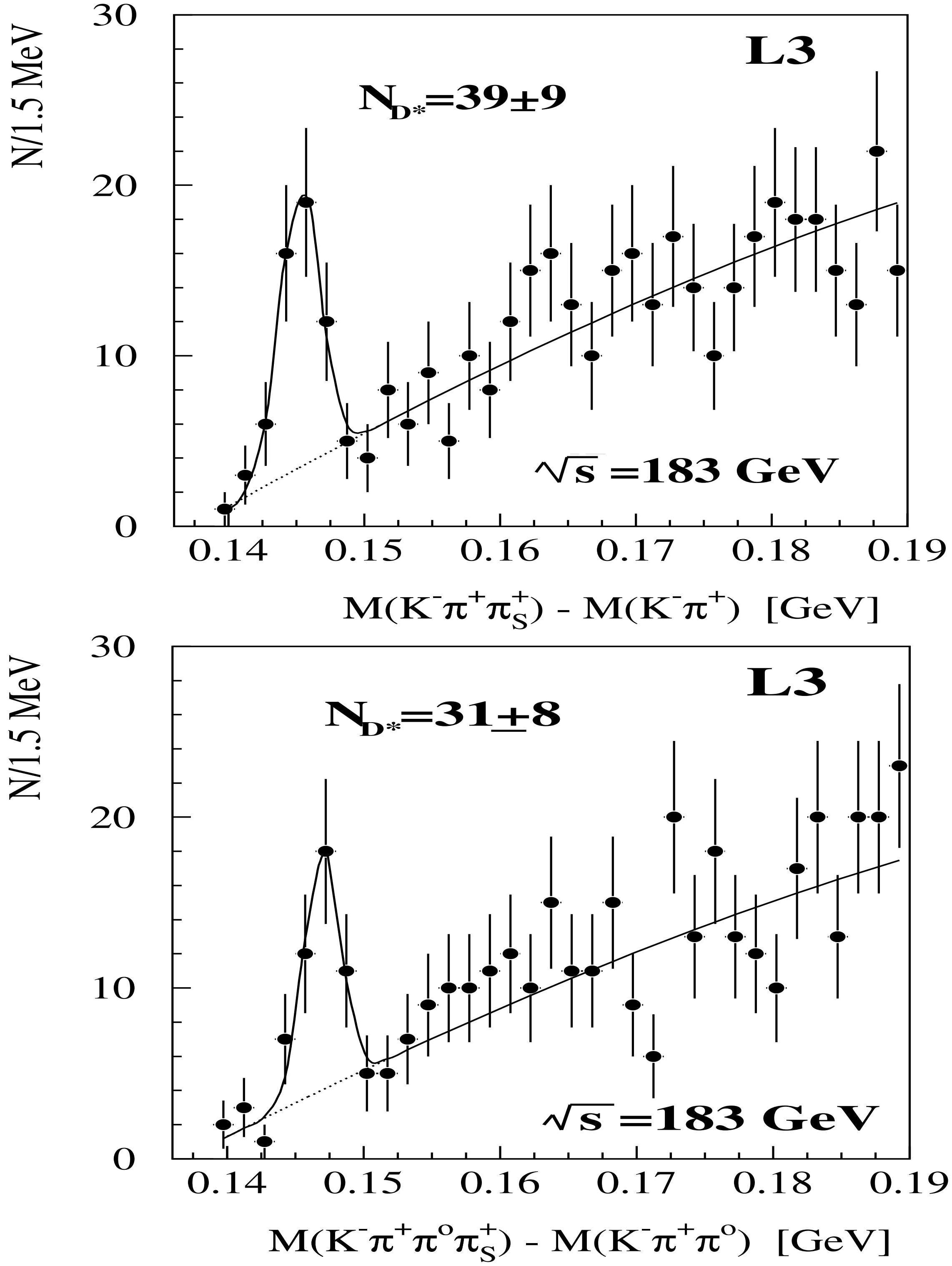
- The most energetic D^0 constituent track must be well measured
- Use dE/dx information for D^0 tracks: Prob(K)·Prob(π) > 0.001
- $1.745 < \mathrm{Mass(K\pi)} < 1.985$ GeV (D^0 resolution $\sigma \approx 50$ MeV)
- π and D^0 form a common vertex near to the primary vertex (d$< 0.8mm$)
- $\mathrm{p}_{D^*} > 1.2$ GeV

$$\mathrm{N_{D^*}} = 39 \pm 9 \qquad \sqrt{s} = 183 \text{ GeV}$$

$$\epsilon(D^*) = (0.11 \pm 0.016)\% \qquad \text{(GGHV01)}$$

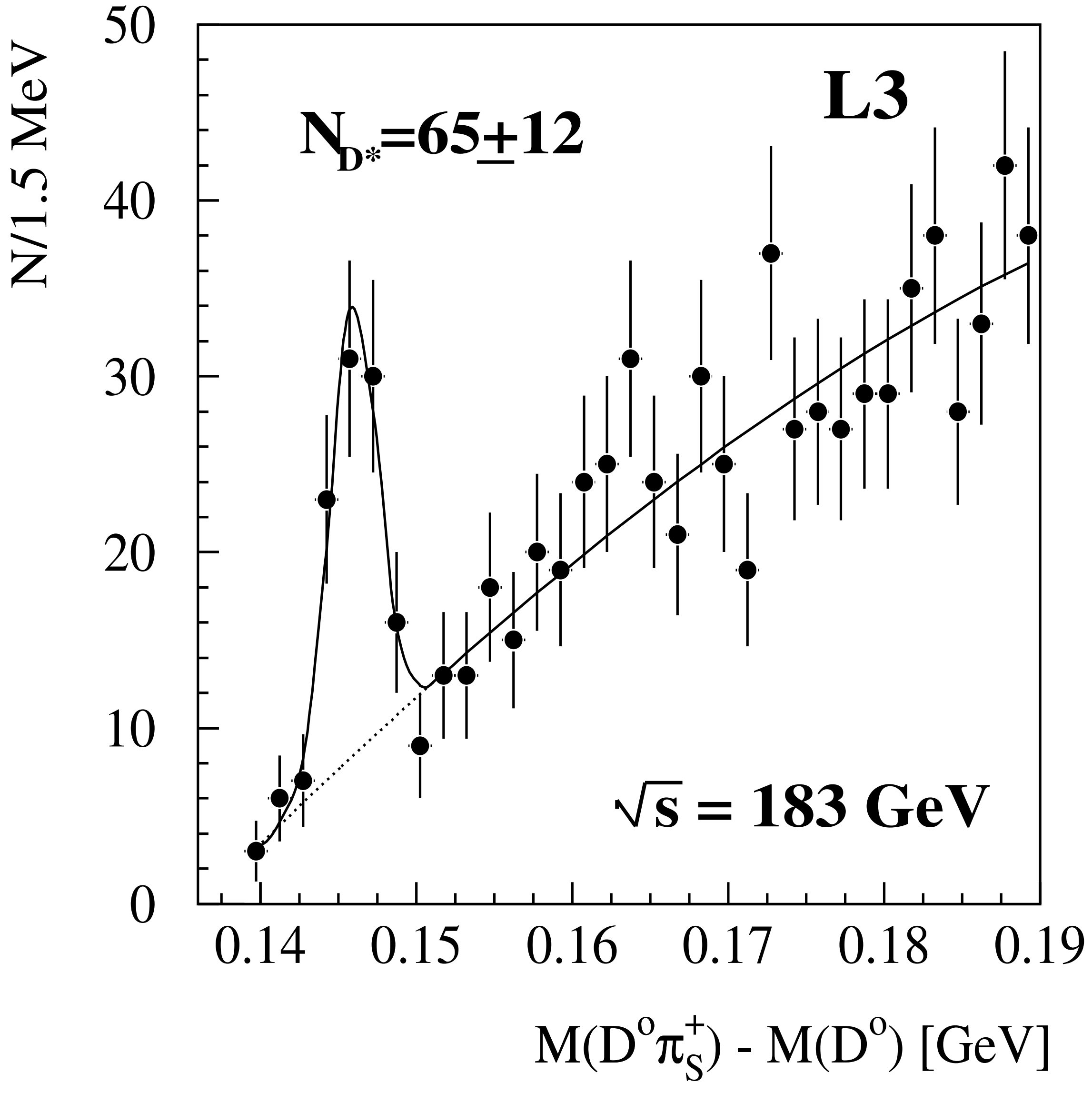
$$\sigma = 1353 \pm 312(stat) \pm 200(M.C.stat) + 282\text{(PYTHIA)}$$

D* Selection



L3
N_{D*}=39±9
$\sqrt{s}$ =183 GeV
N/1.5 MeV
M(K⁻π⁺π⁺_S) - M(K⁻π⁺) [GeV]
0
10
20
30
0.14
0.15
0.16
0.17
0.18
0.19
L3
N_{D*}=31±8
$\sqrt{s}$ =183 GeV
N/1.5 MeV
M(K⁻π⁺π°π⁺_S) - M(K⁻π⁺π°) [GeV]

D^* Selection



N/1.5 MeV
L3
N_{D*}=65±12
$\sqrt{s}$ = 183 GeV
0
10
20
30
40
50
0.14
0.15
0.16
0.17
0.18
0.19
$M(D^o\pi_S^+) - M(D^o)$ [GeV]

$$c \to D^{*+} \to D^0\pi^+ \quad (D^0 \to K^-\pi^+\pi^0)$$

$$D^0 \to K^-\rho^+, K^{*-}\pi^+, K^{*0}\pi^0$$

- π^0 selection :
  $E_\gamma >$100 MeV in barrel, $>$ 200 MeV in end caps
  $E_{\pi^0} >$500 MeV
  $0.120 < \mathrm{Mass}(\gamma\gamma) < 0.150$ GeV
- $(D^0 \to K^-\pi^+\pi^0)$ selection :
  $p_t >$ 250 MeV for charged tracks
  Require $\rho^+ \pm 150$ MeV or $K^{*-} \pm 60$ MeV
  or $K^{*0} \pm 60$ MeV
- $1.745 < \mathrm{Mass(D^0)} < 1.985$ GeV
- π and D^0 form a common vertex near to the primary vertex (d$< 1.5mm$)
- p$_{D^*} > 0.8$ GeV

$\mathrm{N_{D^*}} = 31 \pm 8$ $\qquad$ $\sqrt{s} = 183$ GeV

D^* Acceptance (limited statistics!)

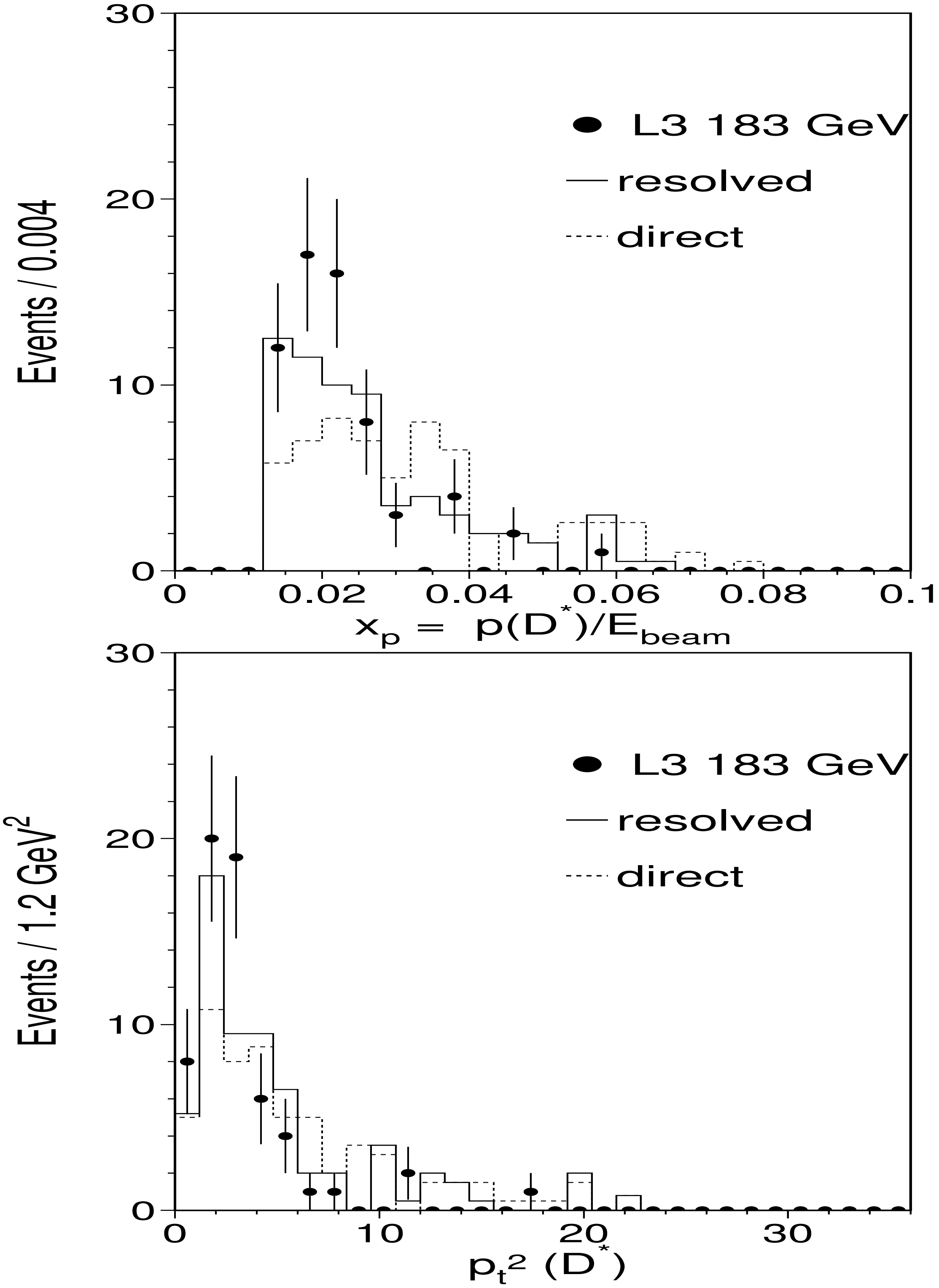
- Dependence on quark mass
- Dependence on M.C. model
  (PYTHIA vs GGHV01)
- Dependence on direct or resolved diagrams

$$\epsilon(D^*) \times 10^{-4}$$

Model	direct	resolved	total
Vermaseren ($m_c = 1.35$GeV)	9.6 ± 1.1		
PYTHIA ($m_c = 1.35$GeV)	7.9 ± 2.0	5.1 ± 1.7	6.9 ± 1.4
PYTHIA ($m_c = 1.6$GeV)	9.3 ± 2.0	8.6 ± 1.9	9.1 ± 1.4
GGHV01 ($m_c = 1.6$GeV)	11.7 ± 2.1	9.9 ± 2.3	11.0 ± 1.6

Comparison with GGHV01

Comparison with GGHV01



Comparison with GGHV01

Comparison with GGHV01