Status of Analysis

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KEK-VPI Meeting

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Recent highlights

- **Skimmed and analyzed data**
  - **skimmed HadronB skim of exp 11(4s + cont), exp 07(cont), exp 13(cont).** $[7.942(4s) + 2.97(cont)]fb^{-1}$
- **All of Roman's cuts included in analysis**
- **All charge conjugate modes added into analysis**
- **All K_L related coding issues perfected**

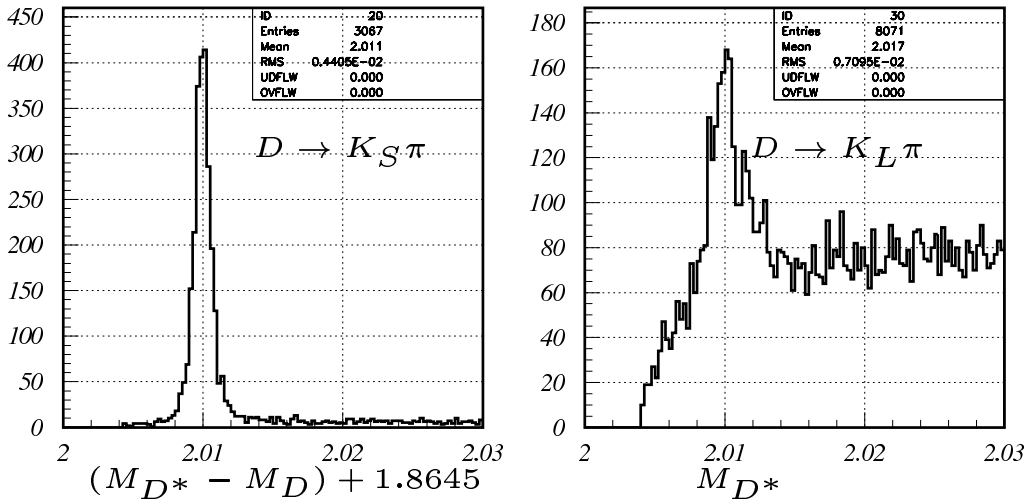
Reconstruction and Event Selection

- π^0 **from mdst-pi0**
  - $E_\gamma \leq .05 GeV/c^2$
- K_S **good** K_S
- K_L **from mdst-klong**
  - **Detector gives only** K_L **direction**
  - M_{D^0} **and** M_{K_L} **is fixed to PDG value and kinematics is solved for** p_{K_L}
  - **Quadratic equation,** $\frac{-b-(\sqrt{b^2-4ac})}{2a}$ **currently chosen solution**
- $K^{*\mp}$ **mass cuts**
  - **(0.842, 0.942) GeV**
- D^0 **mass window cuts and constraints**
  - $\pm 100 MeV$ **of PDG value for** K_S **modes**

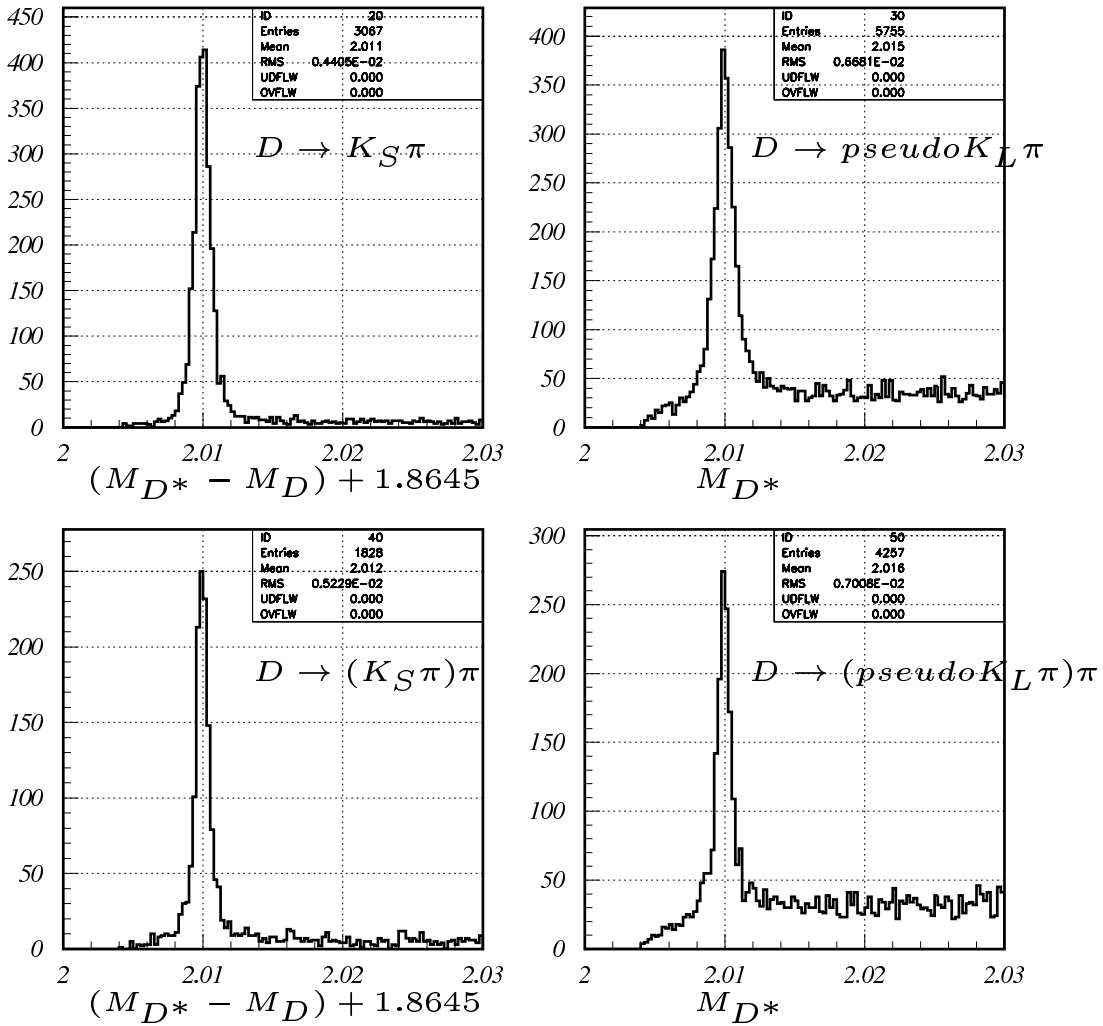
- $D^{*\pm}$
  - $M_{D^{*\pm}} \leq 2.03GeV$ **for** K_L **modes**
  - $(\delta M + 1.8645) \leq 2.03GeV$ **for** K_S **modes**

    where $\delta M = M_{D^{*\pm}} - M_{D^0}$
- **Veto on unreconstructed charged particles(from non-IP region)**
  - **ECL** K_L **s with energy range 0.15 to 0.3 GeV is rejected**
- **Cosine of** K^0 **flight angle wrt** D^0 **boost** (Θ_{DK})
  - $-0.95 \leq \Theta_{DK} \leq 0.2$ **for all modes**
- **Invariant mass of** $\pi^+\pi^-$ **pair**
  - $M_{\pi^+\pi^-} \leq 0.7$

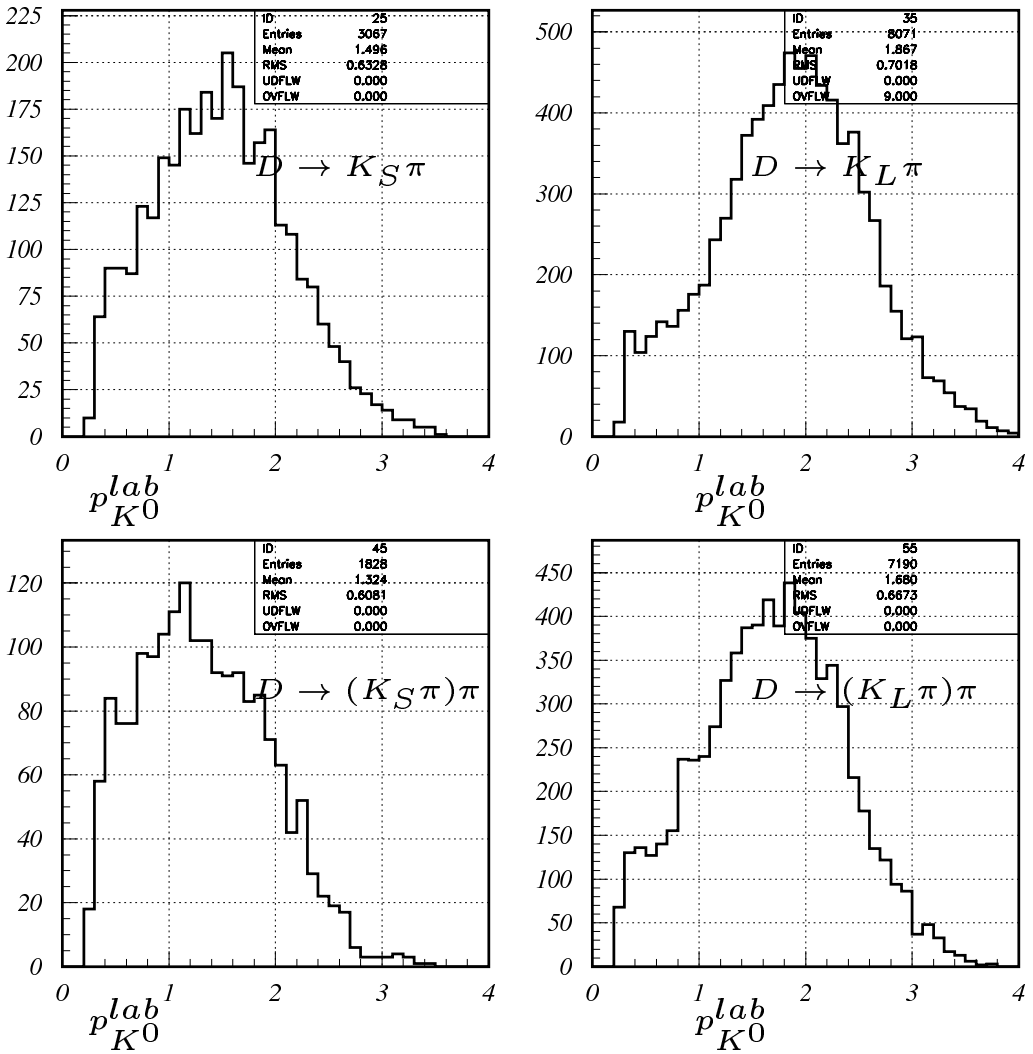
Signal for the 4-modes in 4s and cont data



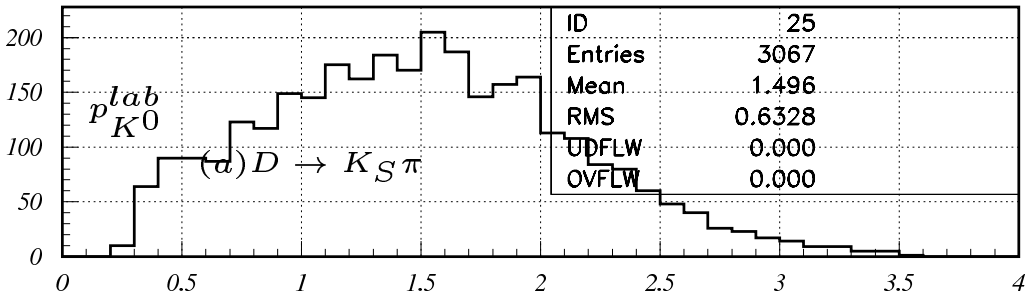
Monitoring performance of K_L reconstruction method in data

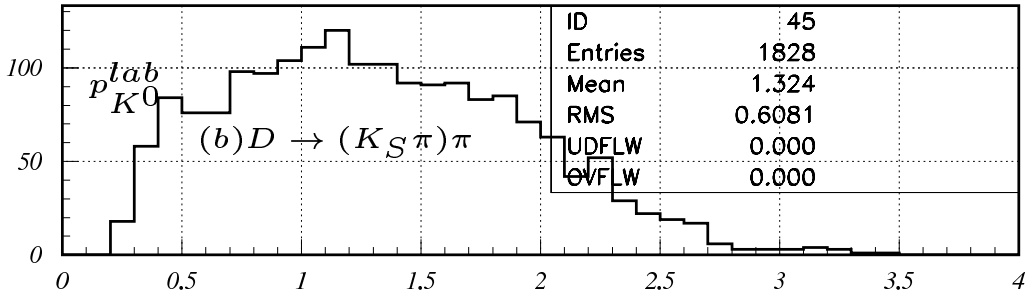


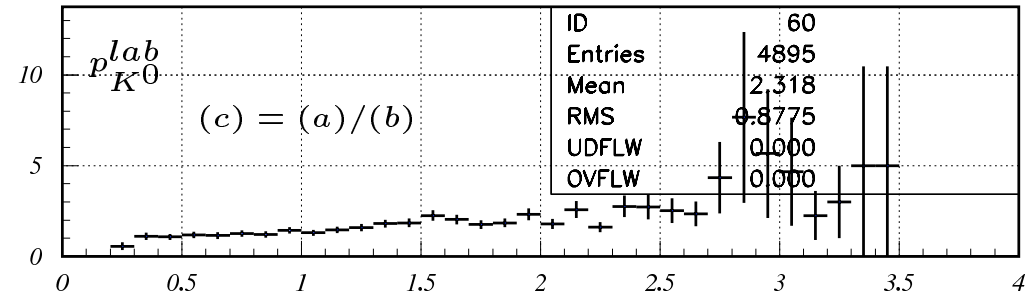
K^0 momentum spectra in Lab, data



Ratio of K^0_S momentum spectra in Lab, data







Next

- *Optimization of cuts*
- *Best candidate selection*
- *Skim and analyze generic MC*
- *Skim more data*
- *Efficiency and MC truth*