

$B^0 \rightarrow \pi^0 \pi^0$ fitter

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Fitter is still not working with the new Likelihood.

Today: simplify fitter and try just with signalMC.

π^0 efficiency with double ratio

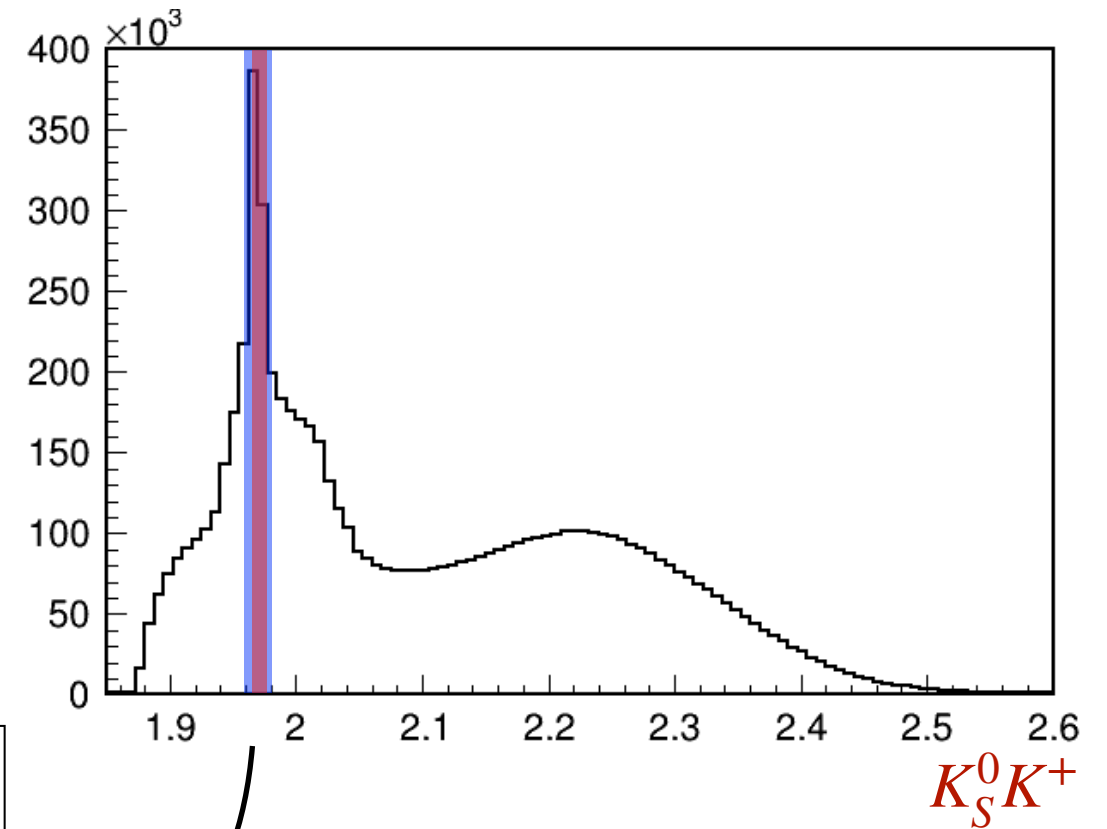
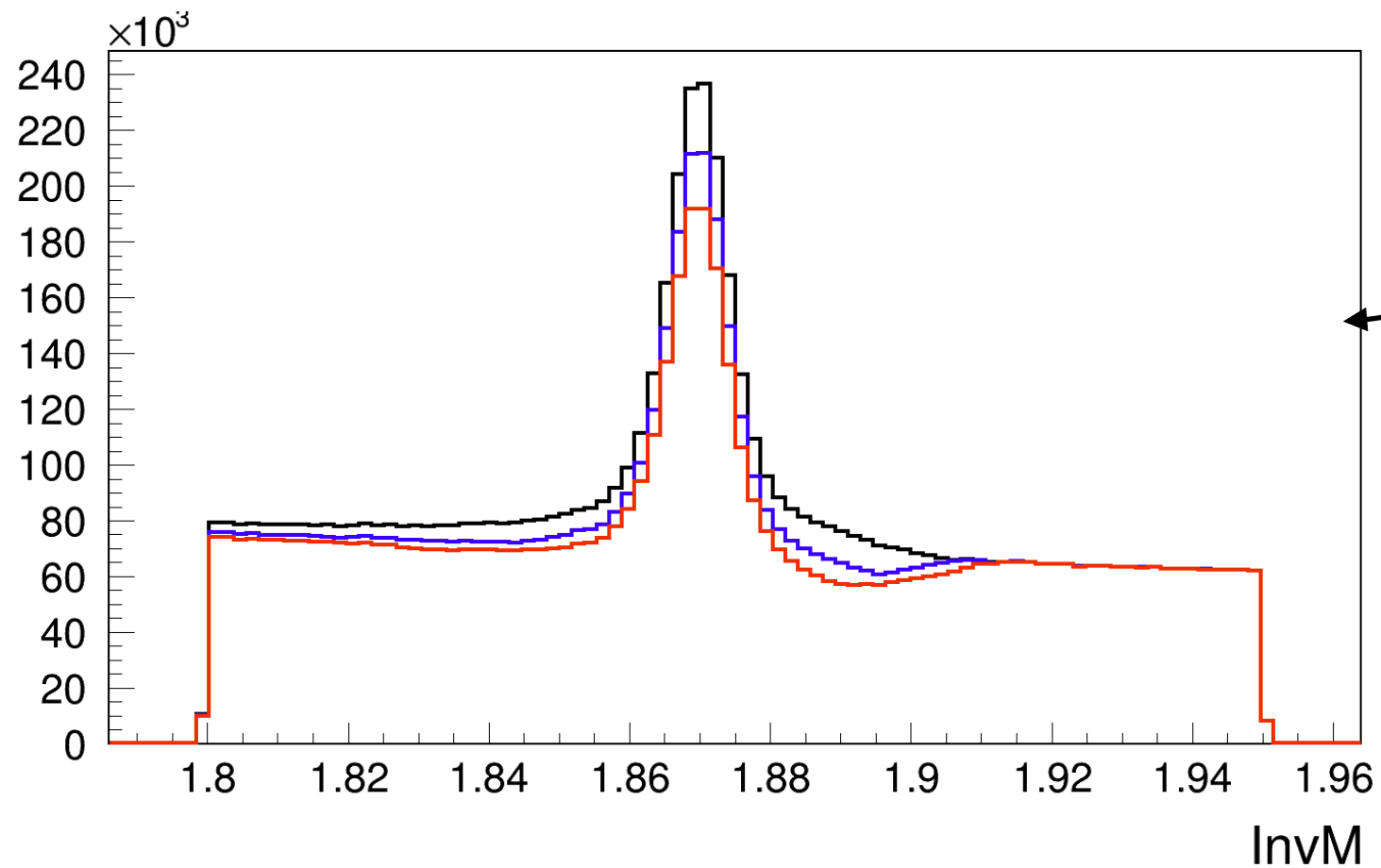
From last time

Possible culprit is the bkg of misID'd $D_S^+ \rightarrow K_S^0 K^+$. Apply very hard cut on π PID (>0.95) to remove misID'd kaons: data/MC ratio passes from 1.15 to 1.02. But, observe 15% data/MC discrepancy in $D^+ \rightarrow K^- \pi^+ \pi^+$.

- Veto D_S by assigning to the $D^+ \rightarrow K_S^0 \pi^+$ pion the kaon mass and vetoing the $K_S^0 K^+$ invariant mass.
- Maybe PID corrections for 0.95 cut will fix this discrepancy
- Use $D^{*+} \rightarrow D^+ [\rightarrow K_S^0 \pi^+] \pi^0$ to avoid misID'd D_S bkg

D_S veto

Veto D_S by assigning to the $D^+ \rightarrow K_S^0 \pi^+$ pion the kaon mass and vetoing the $K_S^0 K^+$ invariant mass.

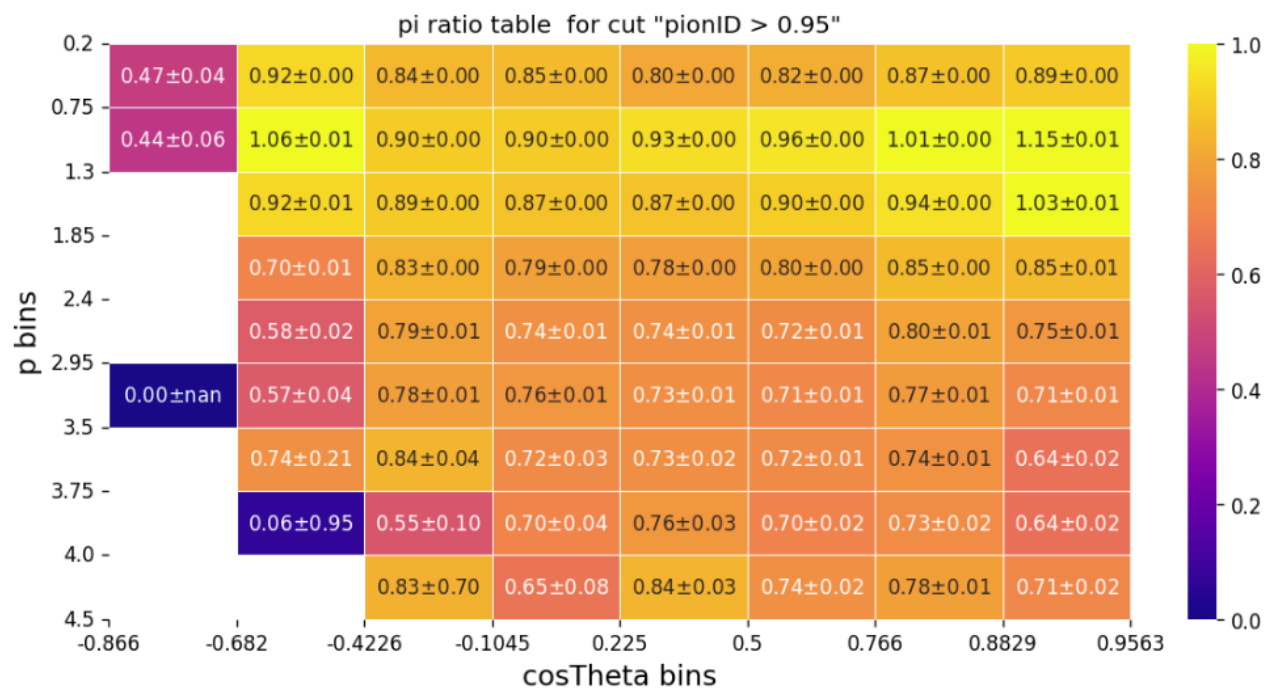


Not good result. Bkg is sculpted.

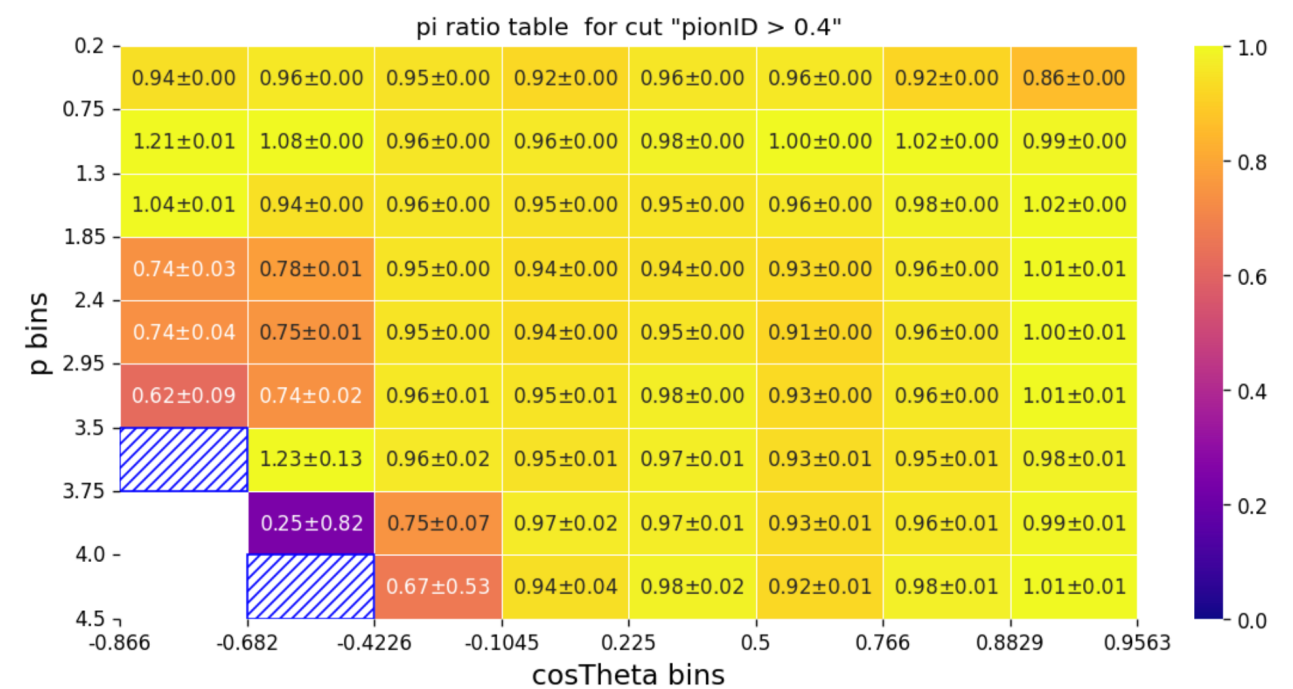
PID corrections: first check

NB: With a looser PID cut (>0.4) we are still able to remove a lot of D_S bkg.

PID corrections for PID >0.95



PID corrections for PID >0.40



Data/MC before corrections = 1.024
Data/MC after corrections = 1.206

Data/MC before corrections = 1.133
Data/MC after corrections = 1.187

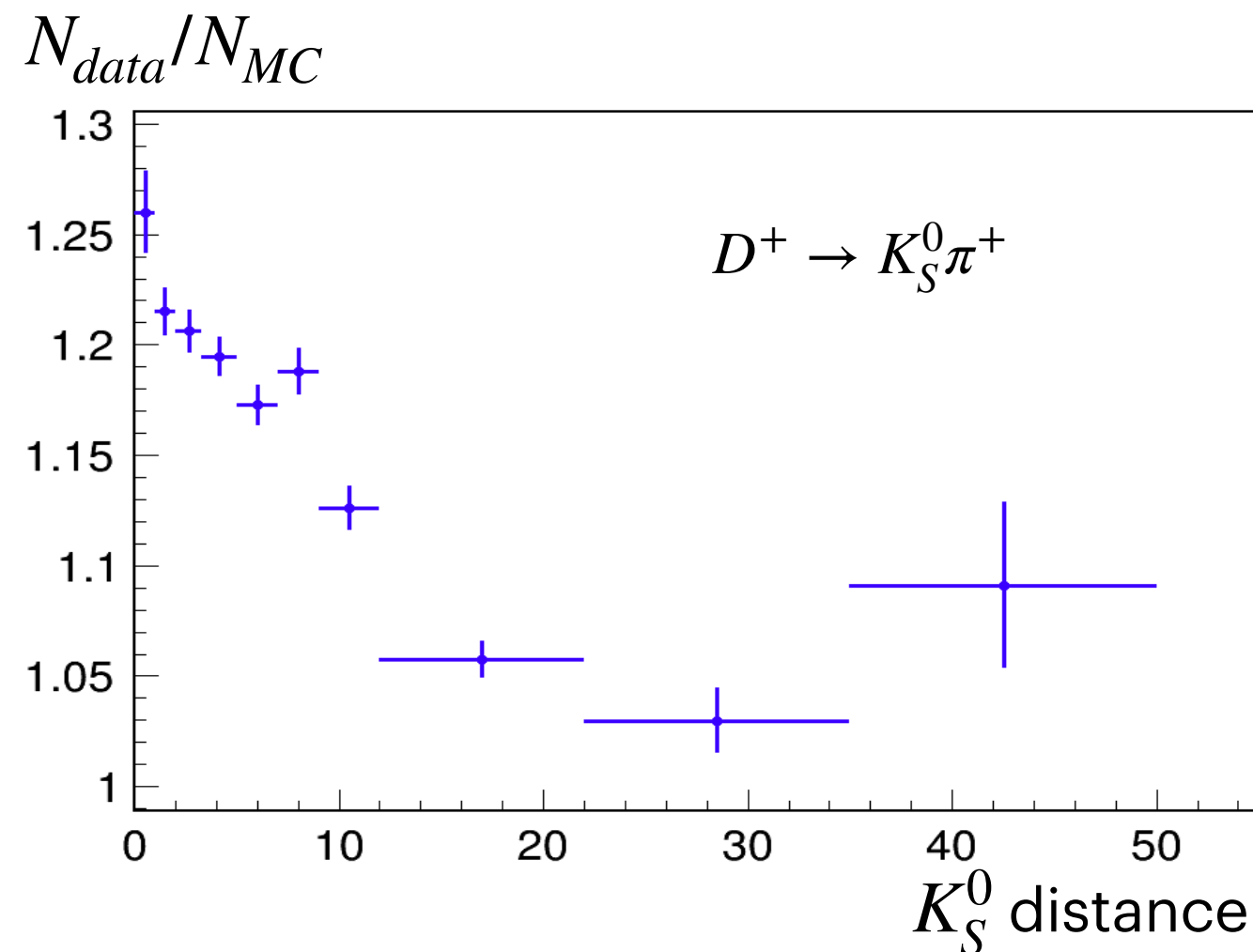
Last time: PID-induced data/MC discrepancies were “luckily” removing our 15% discrepancy. After corrections, discrepancy appears again.

$D^+ \rightarrow \pi^+ \pi^+ \pi^-$ background

BF in MC decfile is the same as in PDG.

Dependence on K_S^0 distance

Measure N_{data}/N_{MC} of $D^+ \rightarrow K_S^0 \pi^+$ decays for different K_S^0 distance intervals.



Strong dependence (similar slope as Sascha).

Larger K_S^0 distances $\rightarrow$ smaller data excess wrt MC (that's why Angelo and Sascha observe smaller excesses?)