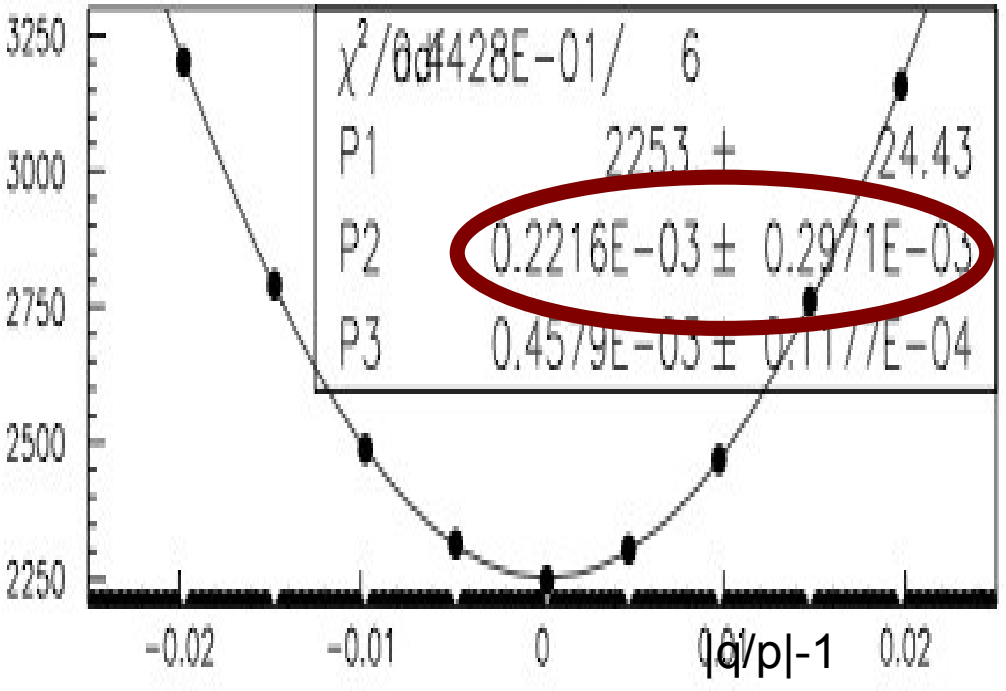
Status of the D*lv q/p Analysis

Last Collaboration Meeting: end of a long story...

Martino 3/24/09



Bias completely removed from the SIG+BKG B^0+B^+ Global fit!
(Fixed Dtag event fraction)

In the following:

- **B^0+B^+ results with free Fdtag;**
- **Full BB + Continuum Preliminary Results.**

Fit Strategy Optimization

- Btag & Dtag samples show different semileptonic asymmetries:

$A_{sl}(Btag) = -2(|q/p| - 1)$ (lepton & kaon from different Bs)

$A_{sl}(Dtag) = A_{sl}(Btag) * \chi_d$ (lepton & kaon from same B)

→ q/p dependence of the Dtag Fraction

- Reconstruction Asymmetry from the B^0 tag**+untag** event sample:

$A_{reco} = (N(l^+) - N(l^-))/(N(l^+) + N(l^-))$

→ q/p dependence (single tag asymmetry)

- Dtag Fraction can be determined from the fit:
$(B^0/B^+) \times (SIG/BKG) \times (Mix/Unmix) \times (K^+/K^-)$ = 16 parameters...

→ Fix the Ndtag B^0/B^+ ratio (for $|q/p|=1$) for each category from MC and fit just the B^0 Dtag fractions (systematic error to be evaluated).

B^0 +B^+ Results: Free FDtag

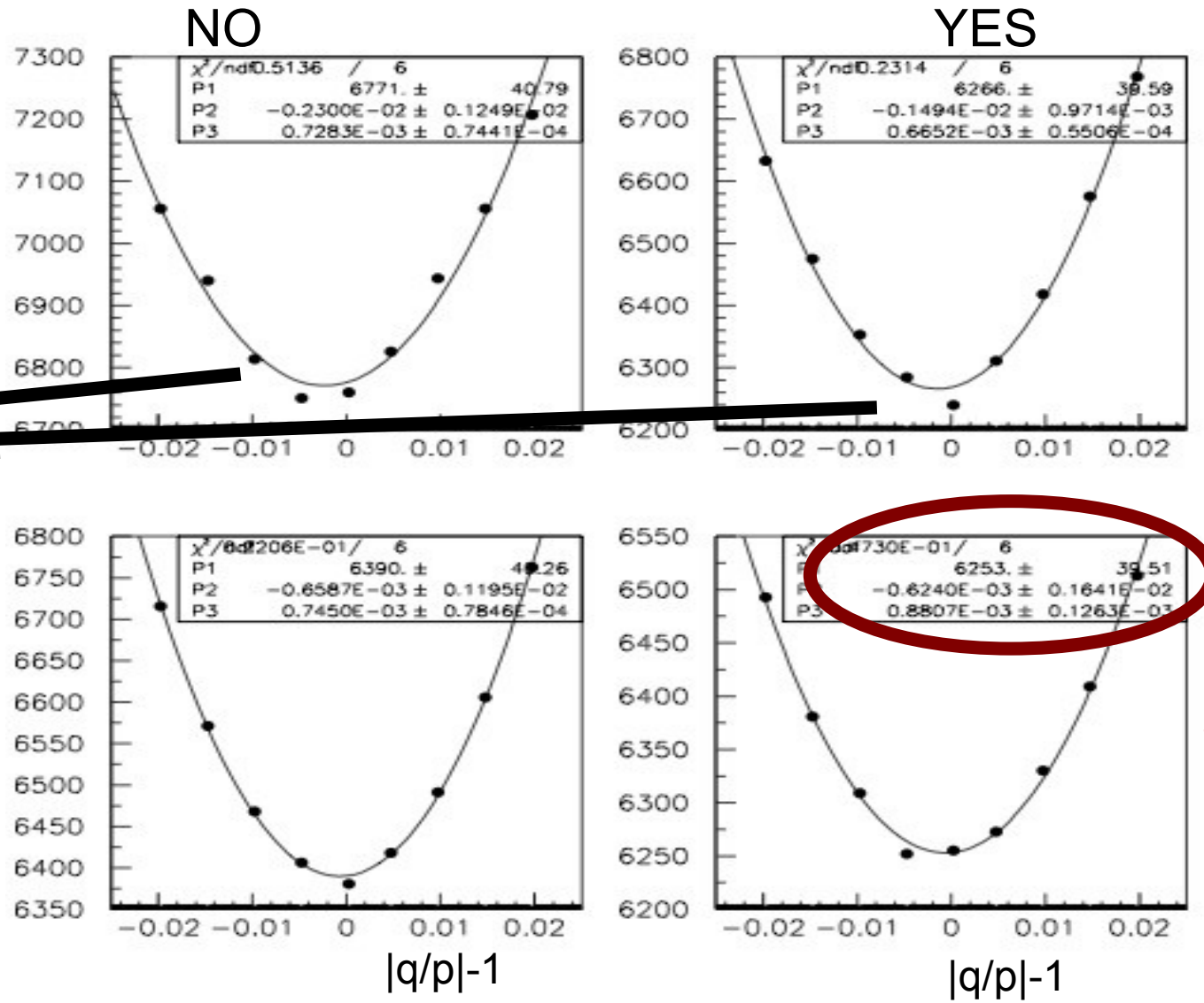
FDtag q/p correction:

Areco q/p Correction:

NO

To be optimized

YES



No bias by adding both the corrections

B^0 +B^+ + Continuum Results: Fix FDtag

FDtag q/p correction:

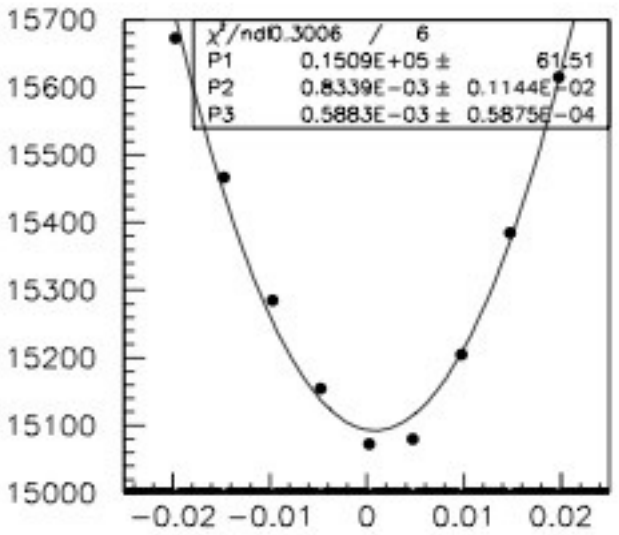
Areco q/p Correction:

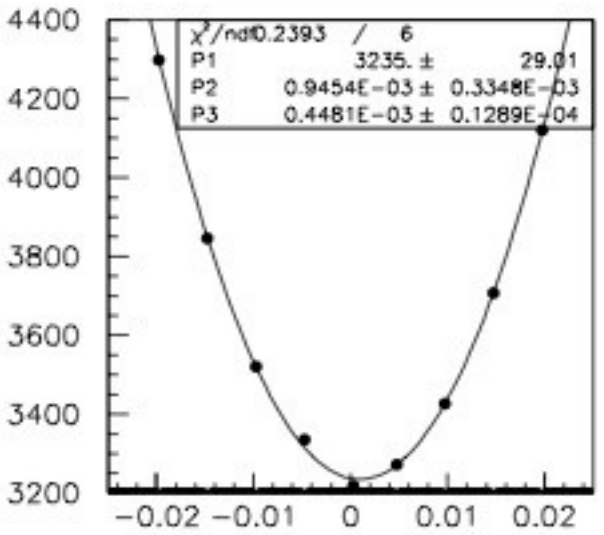
NO

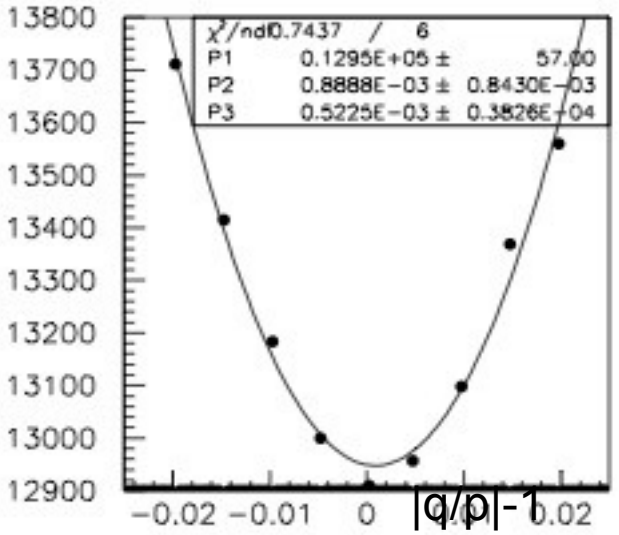
YES

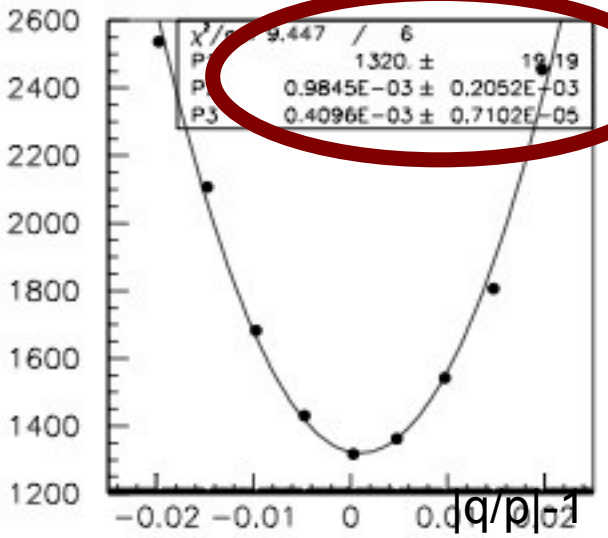
NO

YES









Bias under control

B^0 +B^+ + Continuum Results: Free FDtag

FDtag q/p correction:

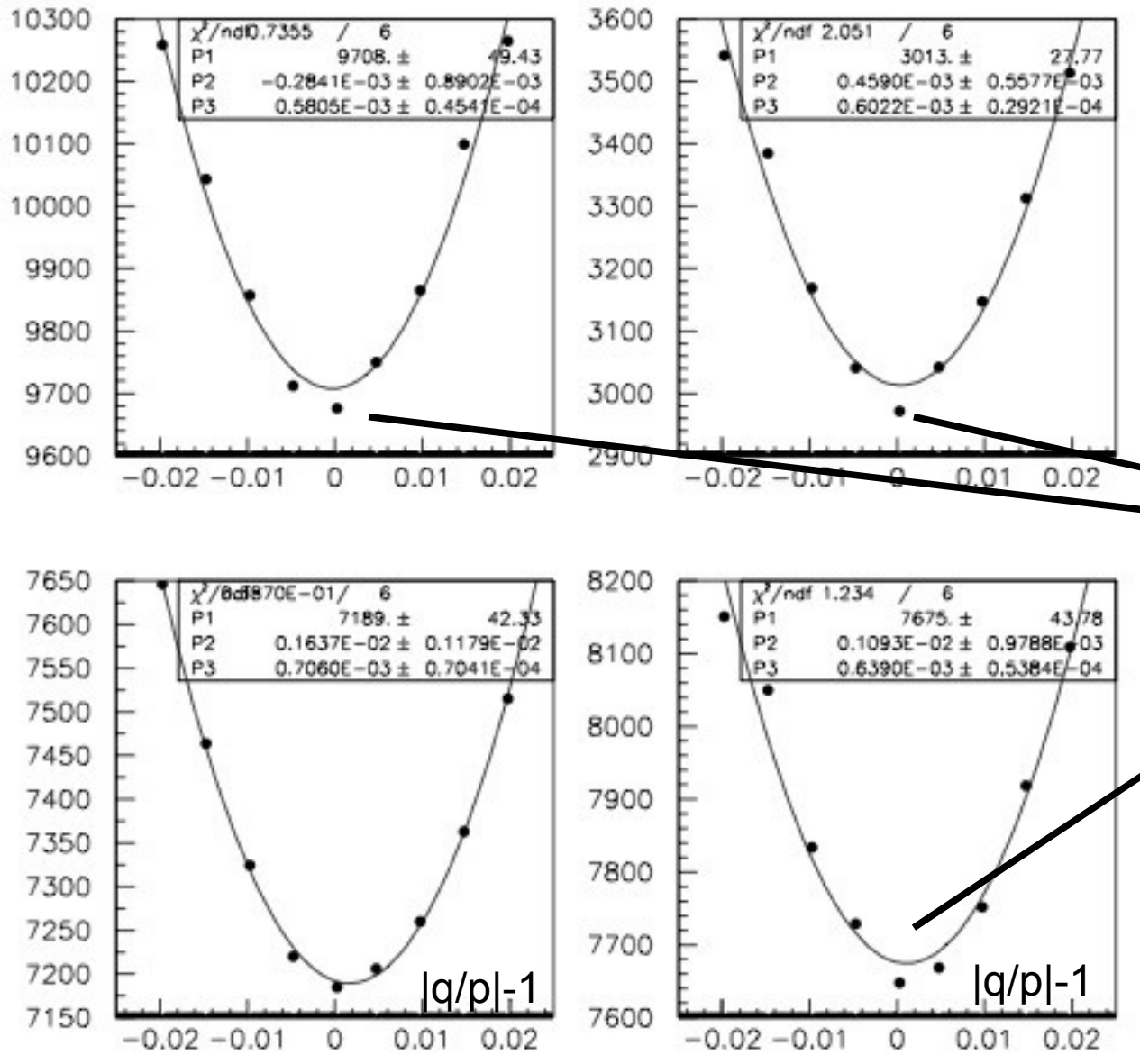
Areco q/p Correction:

NO

YES

NO

YES



Final fit still to be optimized, however bias ≤ 1 per mil already at this stage

Conclusions

- Optimization study confirm the possibility to fit FDtag in the q/p fit;
- Inclusion of B^+ in the fit finalized, no analysis bias emerged;
- Inclusion of the Continuum almost finalized, bias under control.

•Next Steps

- Debug of SIG/BKG fraction vs mv^2 ;
- Toy MC Validation;
- Systematics;