



D* correlated with jets in ZEUS experiment

Status report

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Reminder

D* are used to tag charm jets in DIS events:

- $c \rightarrow D^{*+} \rightarrow D^0 \pi_{slow}^+ \rightarrow K^- \pi^+ \pi_{slow}^+$
- Jet
- DIS

Reminder

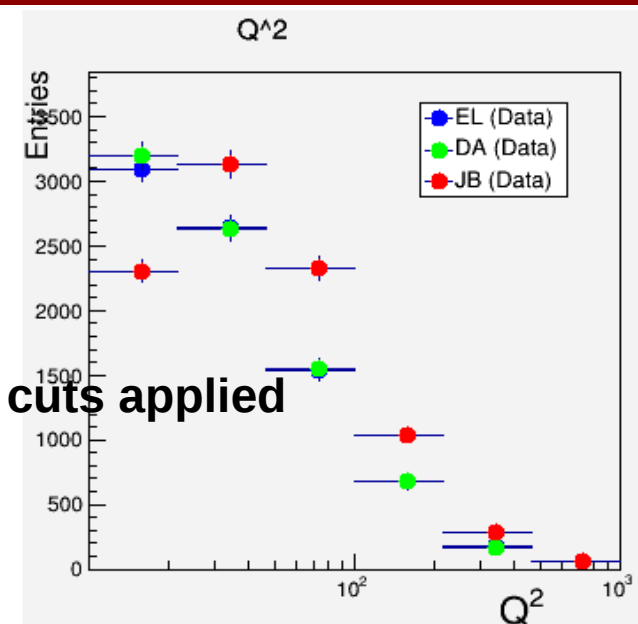
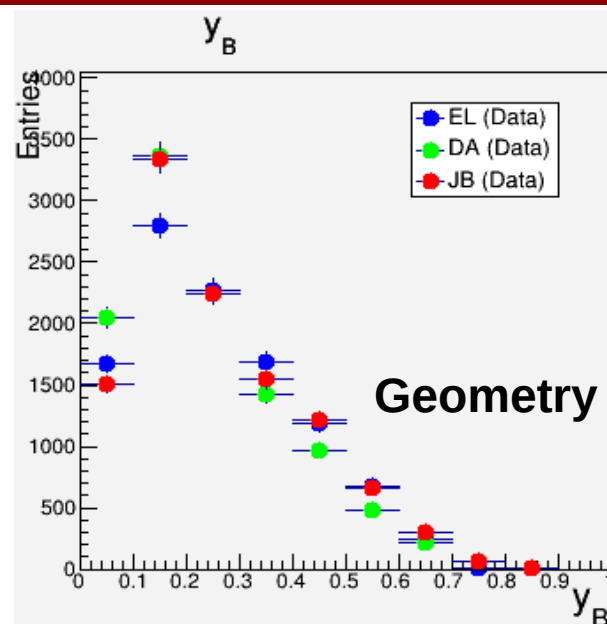
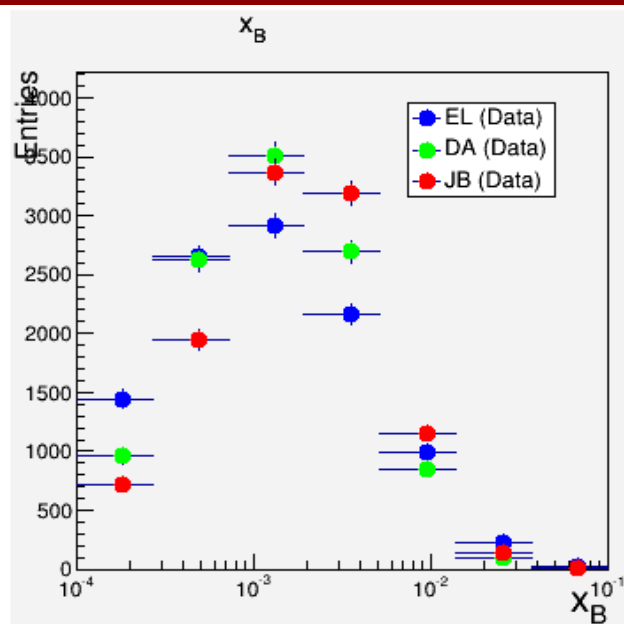
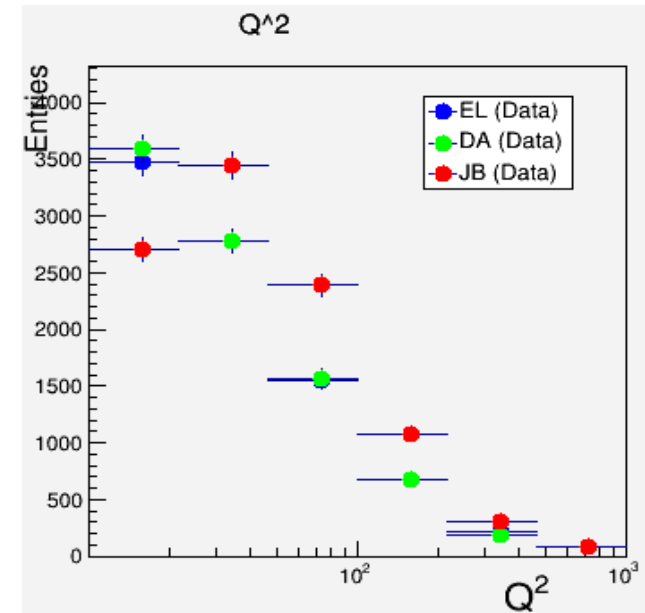
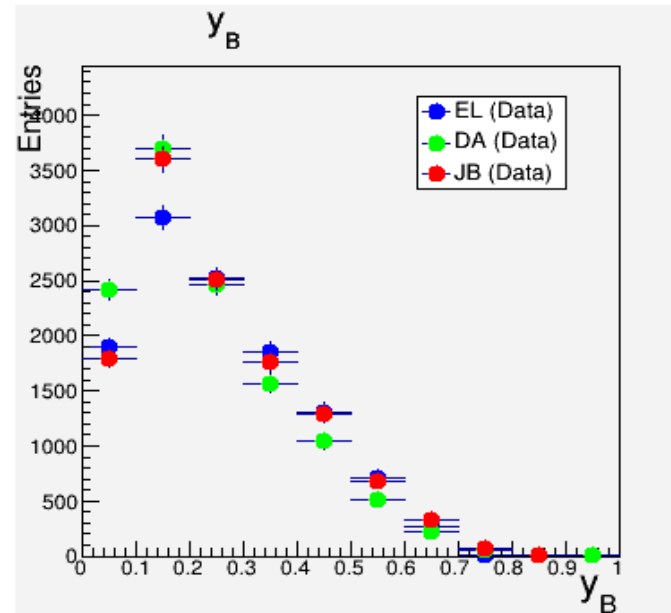
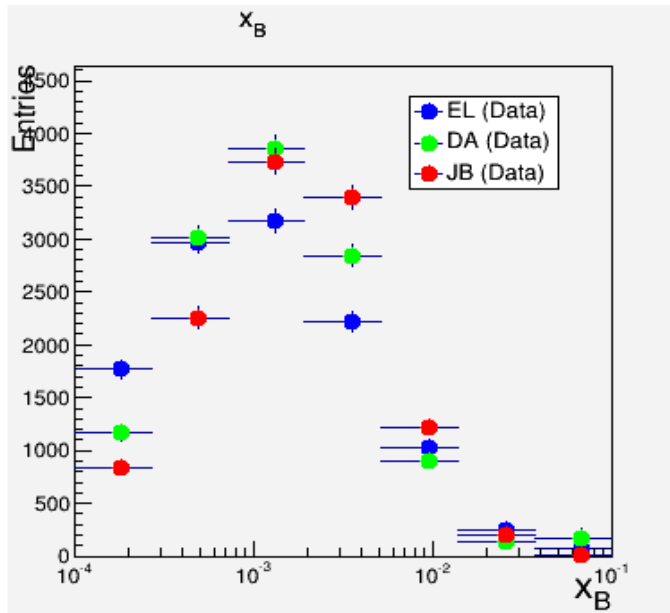
What have been done:

- Selected DIS events with D^* and Jets applied soft cuts
- Obtained clear signal of D^* and D_0
- Obtained kinematic parameters
- Evaluated Z_{jet} values

Selection criteria

D*	DIS
$0.1432 \text{ GeV} < \Delta m(D^*) < 0.1477 \text{ GeV}$ $1.5 \text{ GeV} < p_t(D^*) < 20 \text{ GeV}$ $ \eta(D^*) < 1.5$ $p_t(K, \pi) > 0.4 \text{ GeV}$ $p_t(\pi_s) > 0.12 \text{ GeV}$ $1.83 \text{ GeV} < m(D^0) < 1.90 \text{ GeV}$ Outerlayers(K, π, π_s) ≥ 3 Innerlayers(K, π, π_s) ≤ 1 dedxCTDhits > 7 barrel, wheel hits > 2 chchi2 < 20	$e\text{Prob} > 0.9$ $Q^2(e\text{l}) > 4.0 \text{ GeV}^2$ $E_{e\text{l}}(\text{Corr}) > 10 \text{ GeV}$ $38 \text{ GeV} < E - p_z < 65 \text{ GeV}$ $y(e\text{l}) < 0.95$ $y(\text{JB}) > 0.02$ Box cuts 15 x 15 cm Chimney, crack cuts $Z_{\text{vtx}} < 30 \text{ cm}$ MVDTAKE, EVTAK
	Jets
	KT_JET_B finder, $E_t > 3 \text{ GeV}$ $\Delta R(D^* - \text{Jet}) < 1$. in yp frame
Triggers	Data samples
FLT: 30, 34, 36, 44, 46 TLT: 04-06e HFL02 SPP02, 0607p HFL02 HFL17 SPP09 HPP31	Data: full HERA-II data CN v08a, Luminosity $\sim 363 \text{ pb}^{-1}$ MC: Rapgap incl. charm in DIS

Influence of geometry DIS cuts on kinematic parameter distributions

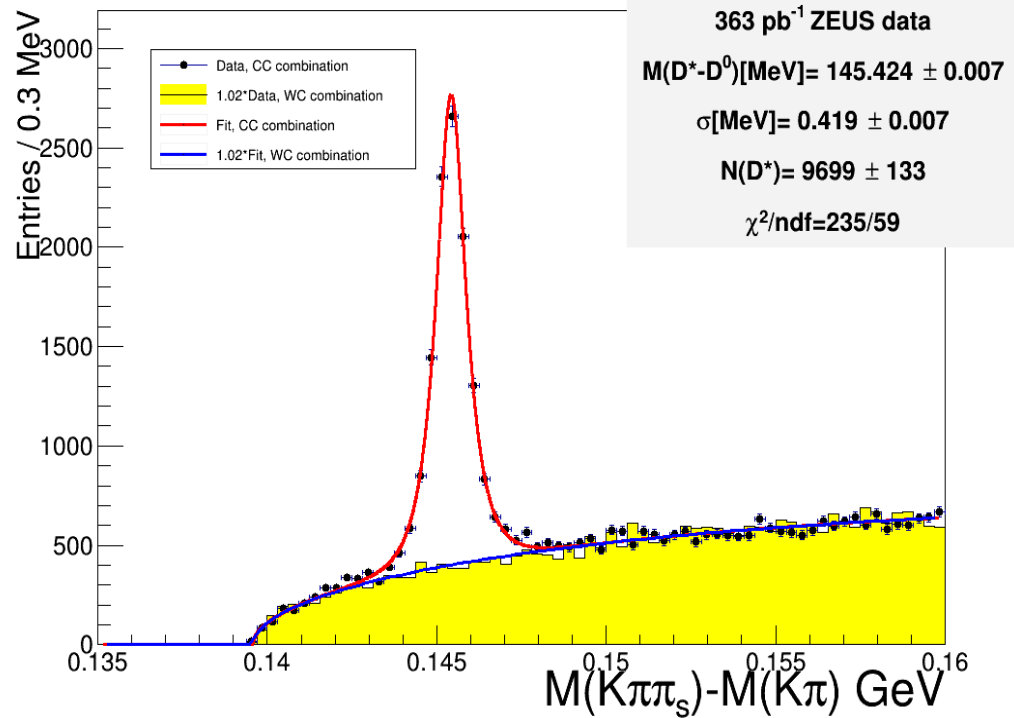


Geometry DIS cuts applied

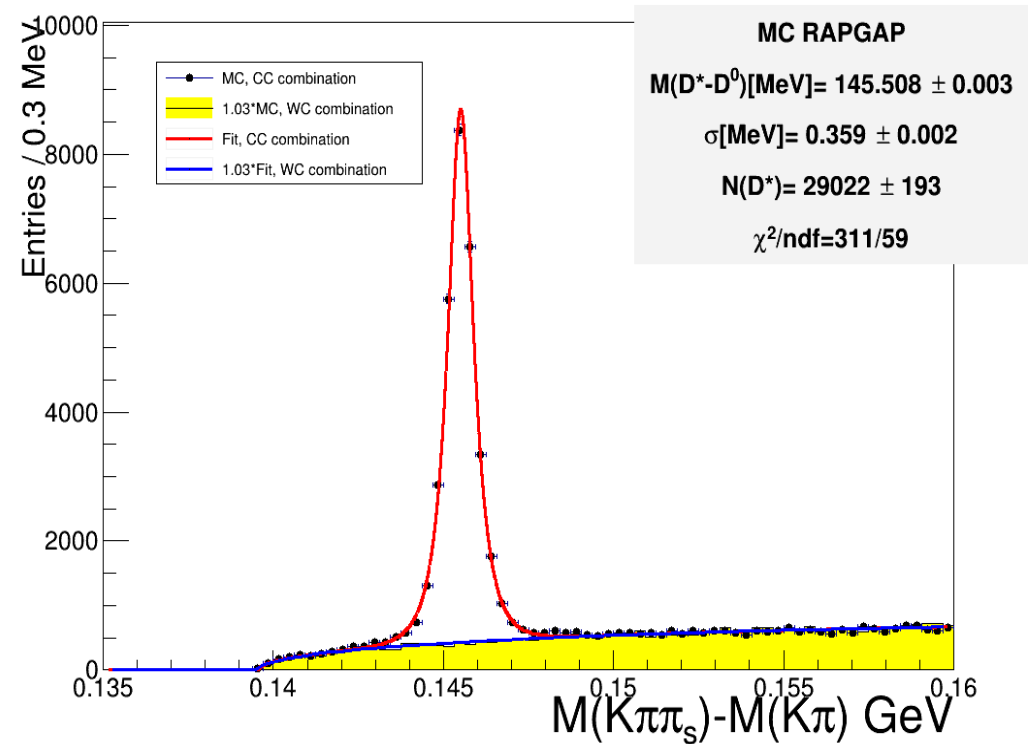
Data & MC comparison

D* in DIS associated with jet: Data & MC

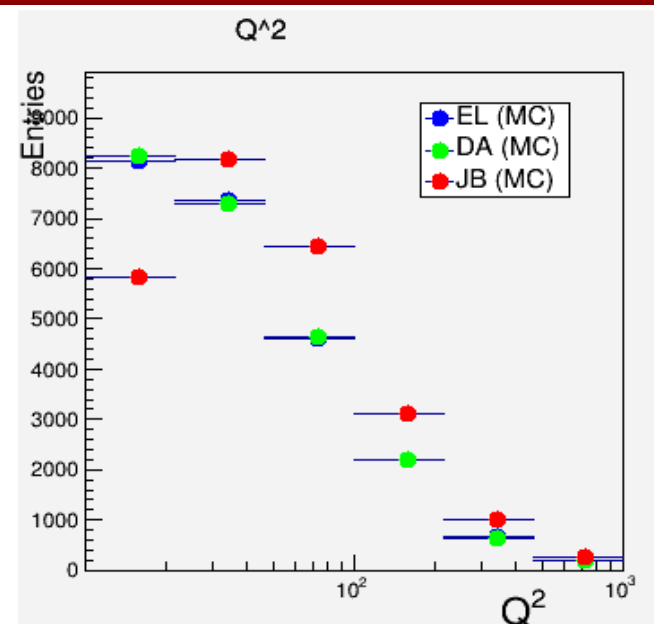
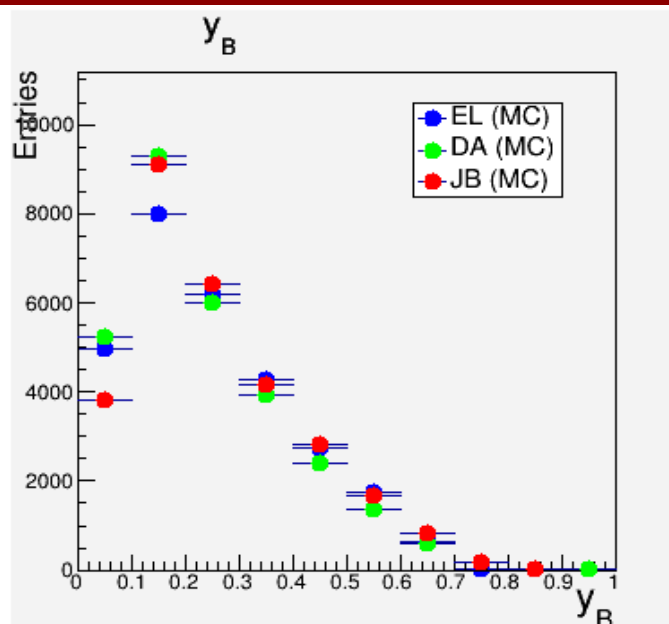
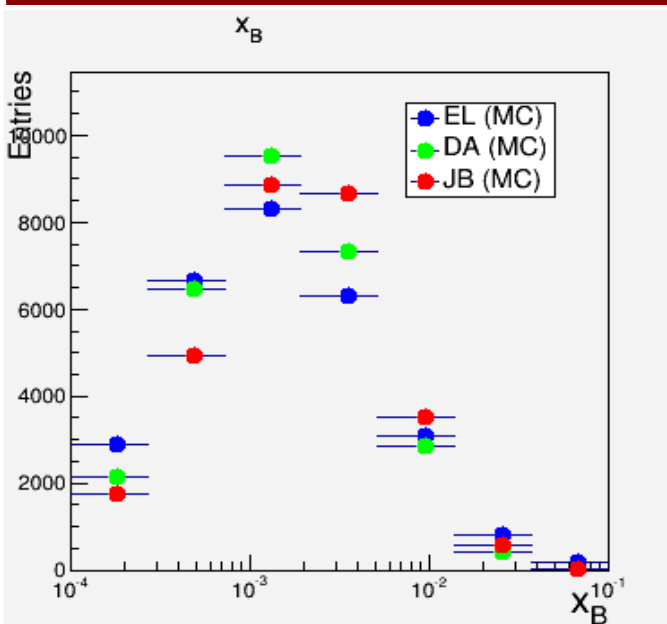
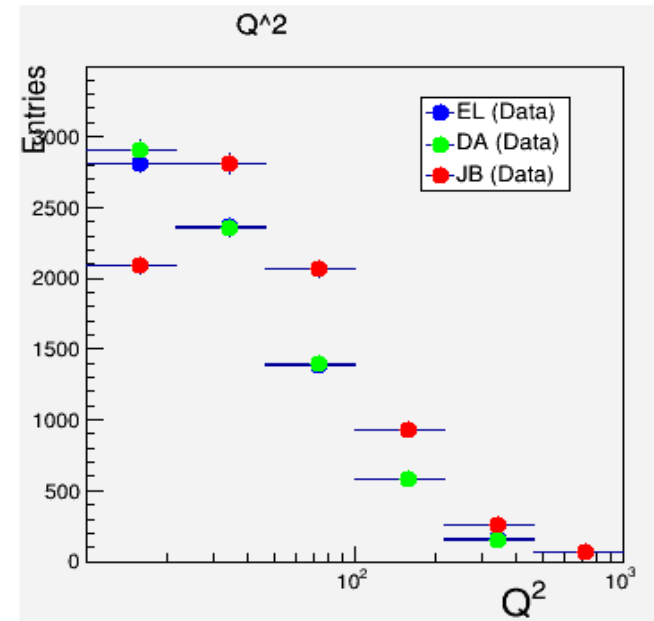
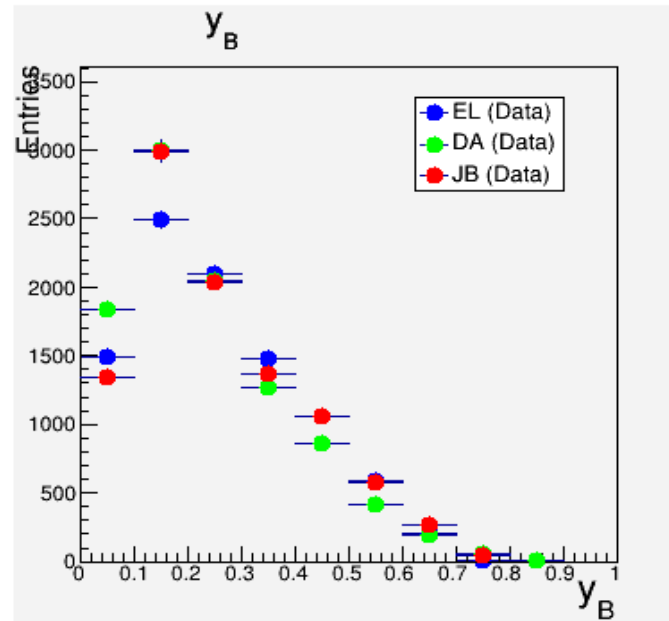
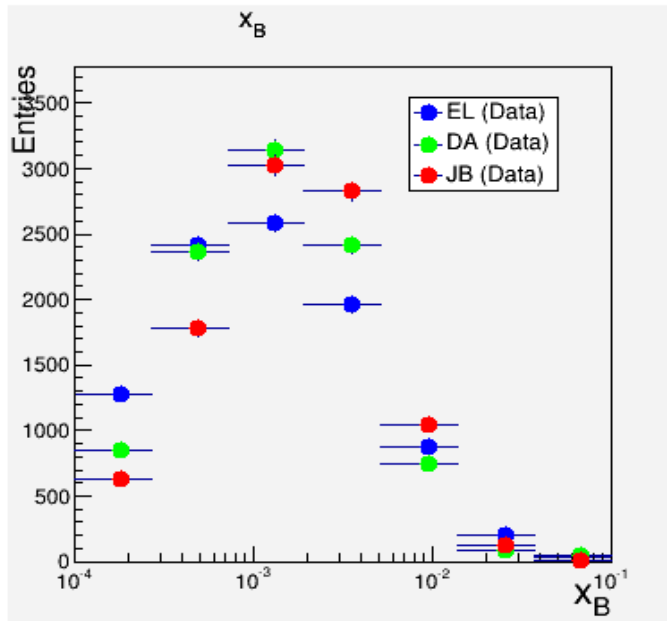
D* associated with jet



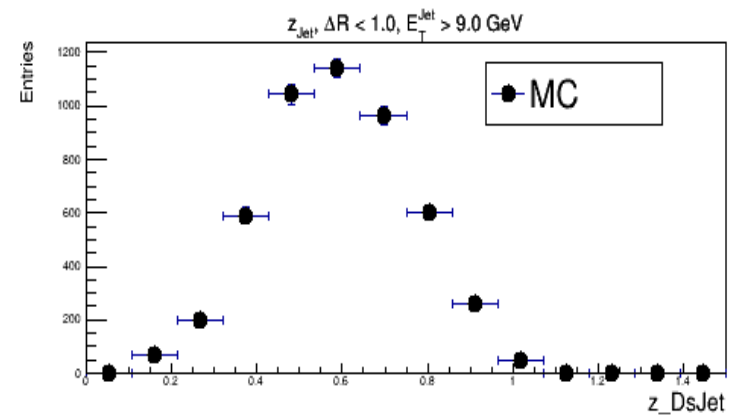
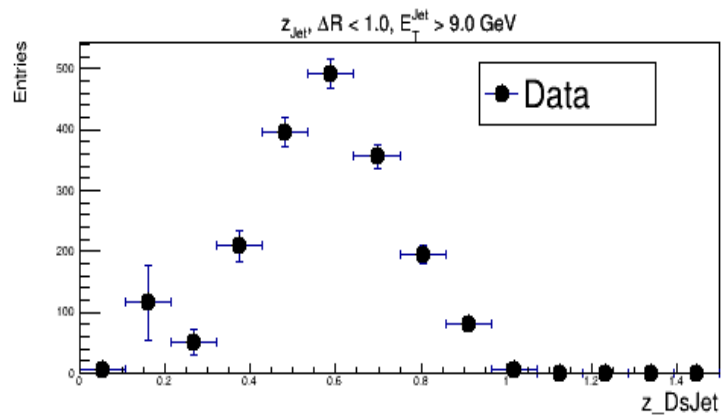
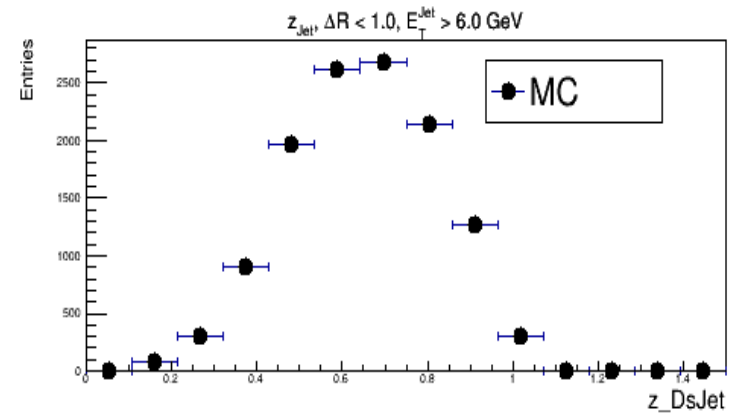
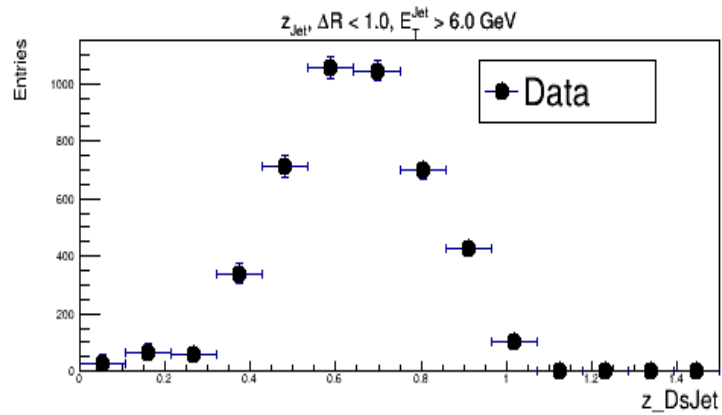
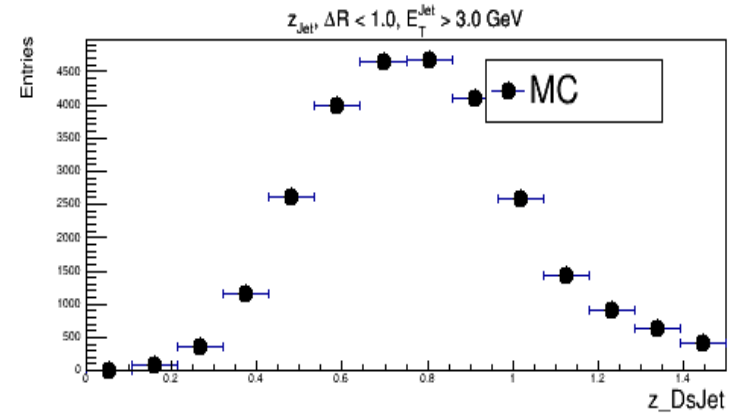
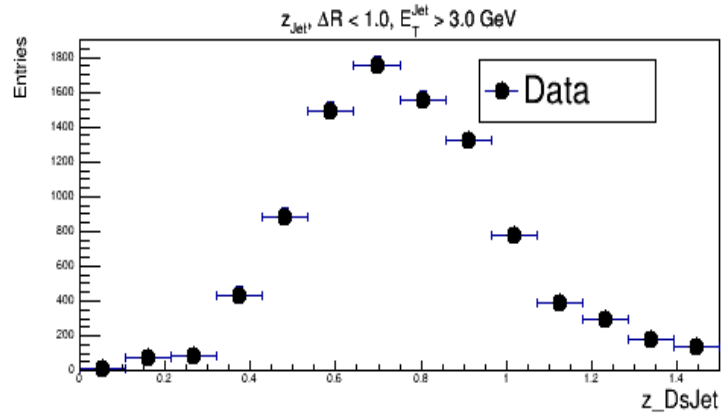
D* associated with jet



Kinematic parameter distributions: data & MC



Zjet



Conclusions and plans

Conclusions:

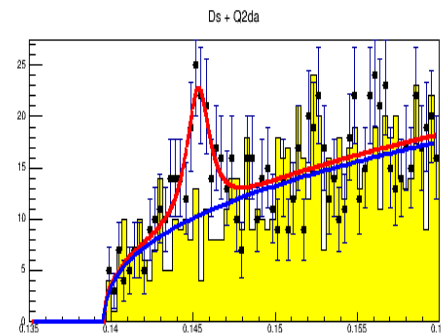
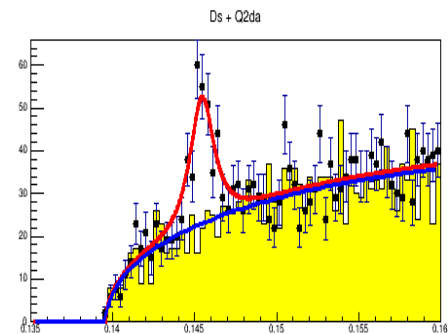
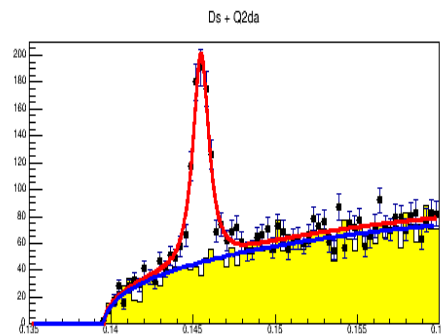
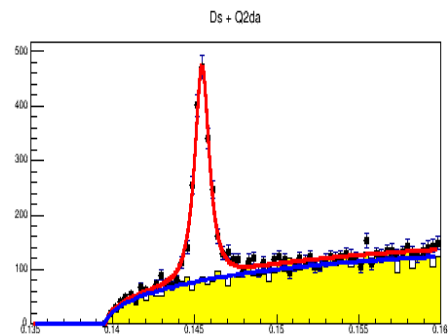
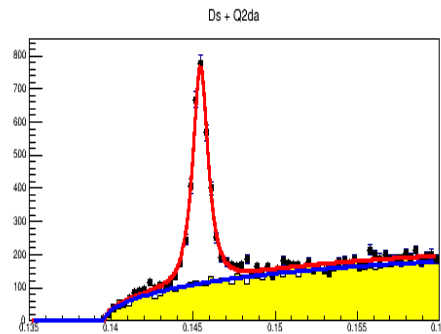
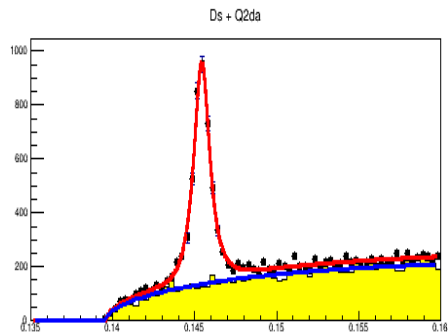
- New cuts applied
- Different methods (el, da, jb) for x,y, Q2 still give sufficiently different distributions of kinematic parameters
- Obtained MC distributions
- Different distributions for MC, particularly Z_jet, are in agreement with data

Plans:

- Select charm fragmented to D* at true level
- Understand the reason of sufficient difference in kinematic .par.

BackupS

Procedure of variable measurement



1. Fill histograms of $\Delta m(D^*)$ in different bins of Q^2
2. Calculate an area of the peak of $\Delta m(D^*)$ distributions
3. The area of the D^* peak corresponds to number of entries in the Q^2 bin

D^0 from D^*

