

# Algorithm

- **Candidate tag track selection**
  - Choose all tracks which are inside  $dR < 0.7$  cone around B-meson direction
  - Remove all the muon tracks, and  $K^\pm$  tracks (used to make  $B^\pm$  vertex)
  - Apply track quality cut, i.e. track must have at least 2 SMT and 3 CFT hits
  - If no candidates are available, B candidate is “untagged”
- Among candidate tracks, select track with e.g. highest  $p_T$
- Returning the charge of the tagged track, say  $Q_t$ 
  - If  $Q_t = -Q_K \rightarrow$  correctly tagged B
  - If  $Q_t = Q_K \rightarrow$  wrong tagged B
- Extract yield for each case and do arithmetic
  - Fill B mass histograms for all B's, untagged, correct tags and wrong tags
  - Fit all B's histogram to get  $N_T$ ; use B mass and  $s$  from this for other fits
  - Fit other 3 plots to get  $N_U$ ,  $N_C$  and  $N_W$ , respectively
  - Dilution(D) =  $(N_C - N_W) / (N_C + N_W)$
  - Efficiency(e) =  $1 - (N_U / N_T)$
  - Tagging Power(TP) =  $eD^2$

## Same Side Tagging Results for $B^+ \rightarrow J/\psi K^+$

- Using a cone size of 0.7 in  $d\eta \times d\phi$
- Tag method selection highest  $p_T$  track in cone

Efficiency:  $79.2 \pm 2.1 \%$

Dilution:  $26.4 \pm 4.8 \%$

$\epsilon D^2$ :  $5.5 \pm 2.0 \%$