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Forward- Backward Asymmetry of b quarks in $B \rightarrow J/\psi K$ decays at DZero

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I present an analysis of the forward-backward asymmetry A_{FB} in the $B \rightarrow J/\psi K$ decay channel at the DZero experiment. This asymmetry reflects the probability for b - \bar{b} pairs to be produced without directional bias. We use the tools of DZero flavor physics analyses to measure this asymmetry in charged B decays. The charged $B \rightarrow J/\psi K$ process is not affected by neutral B meson mixing, and regular magnet polarity changes allow for cancellation of many first-order detector effects.

A_{FB} is extracted from a maximum likelihood fit to the difference between forward and backward $B^{+/-}$ mass distributions, using a boosted decision tree to reduce background. Corrections are made for reconstruction asymmetries of the decay products. In this blinded trial A_{FB} is consistent with zero, with a statistical uncertainty of 0.3%.

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