D_s Hadronic BF Update

Peter Onyisi

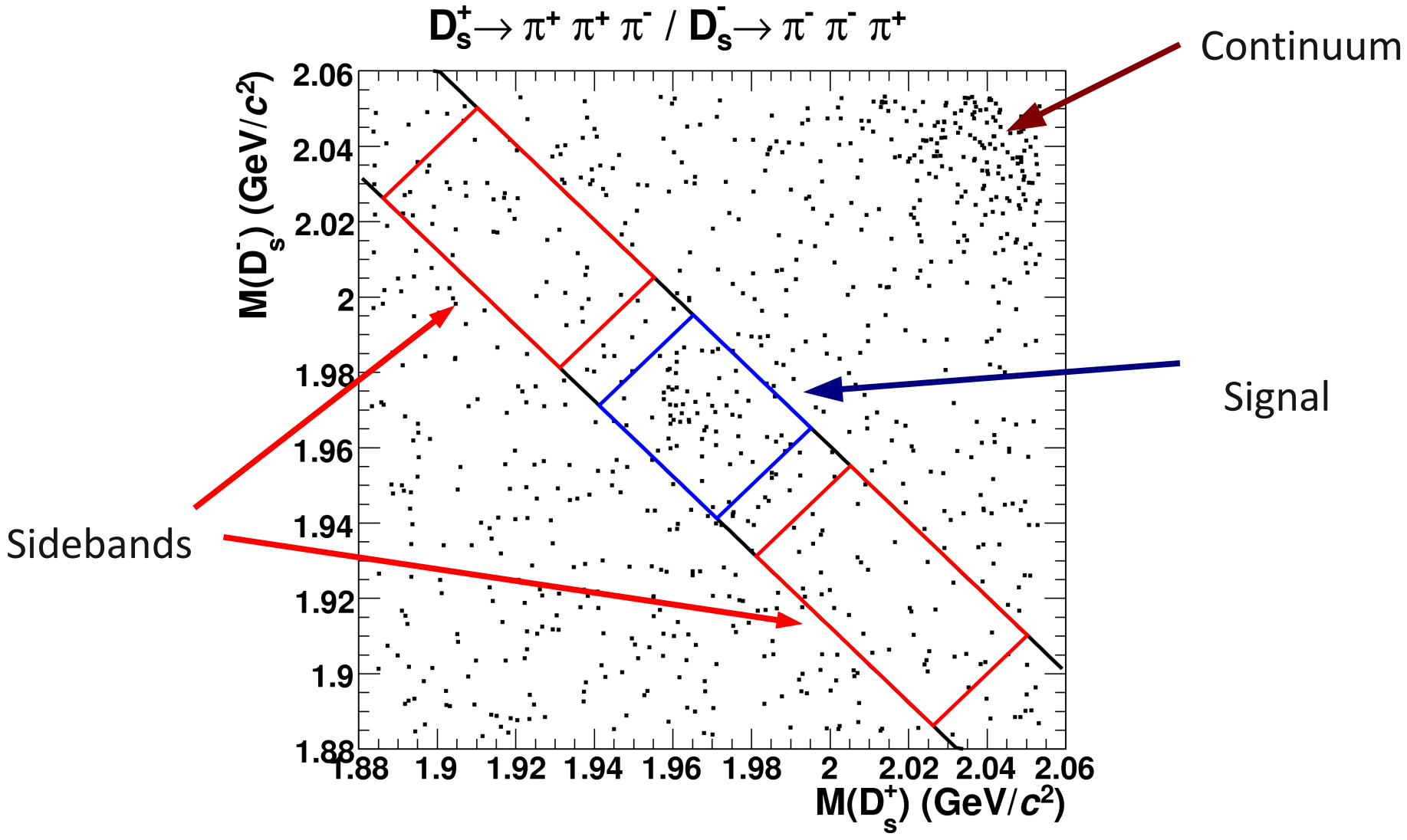
25 Jan 2011

THE UNIVERSITY OF CHICAGO

General Status

- Single tag yield extraction was updated a while ago
  - now includes parametrization of background shape from generic MC; χ^2 of fits improved
- Have been stuck on what to update for double tags
  - reminder: yields are obtained from a signal region in $M(D_s)$ vs $M(\overline{D}_s)$ space, backgrounds from sidebands at same $M(D_s)$ + $M(\overline{D}_s)$ - “cut and count”
  - backgrounds have significant structure in the mass plot; 2D fits are be tricky (and for modes with small yields the statistical error is hard to interpret)
  - Loose cuts on candidates mean lots of background especially in newer modes (e.g. $\omega\pi$).

Example of DT plane



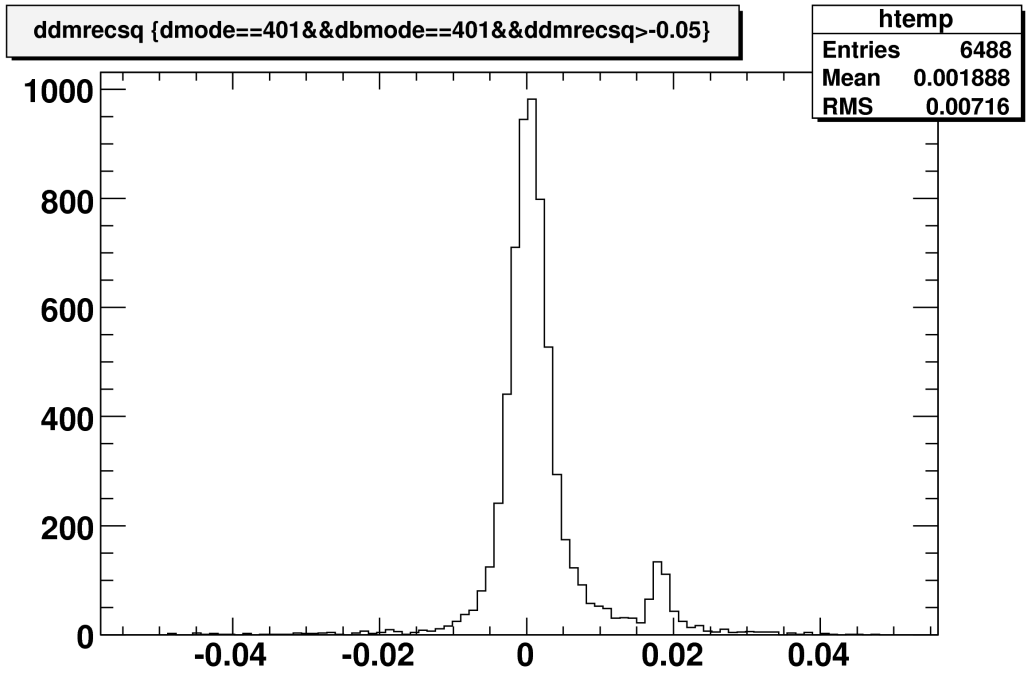
Possible Improvements

- We can use additional kinematic rejection on our events, at the expense of some efficiency (and related systematic)
  - Only consider for dirty DT modes
- Option 1: recoil mass^2 of $D_s\overline{D}_s$ system should be 0 (except for $D_s^* \rightarrow D_s \pi^0$ and ISR)
- Option 2: at least one D_s candidate should be near recoil mass of $M(D_s^*)$ (except for ISR)

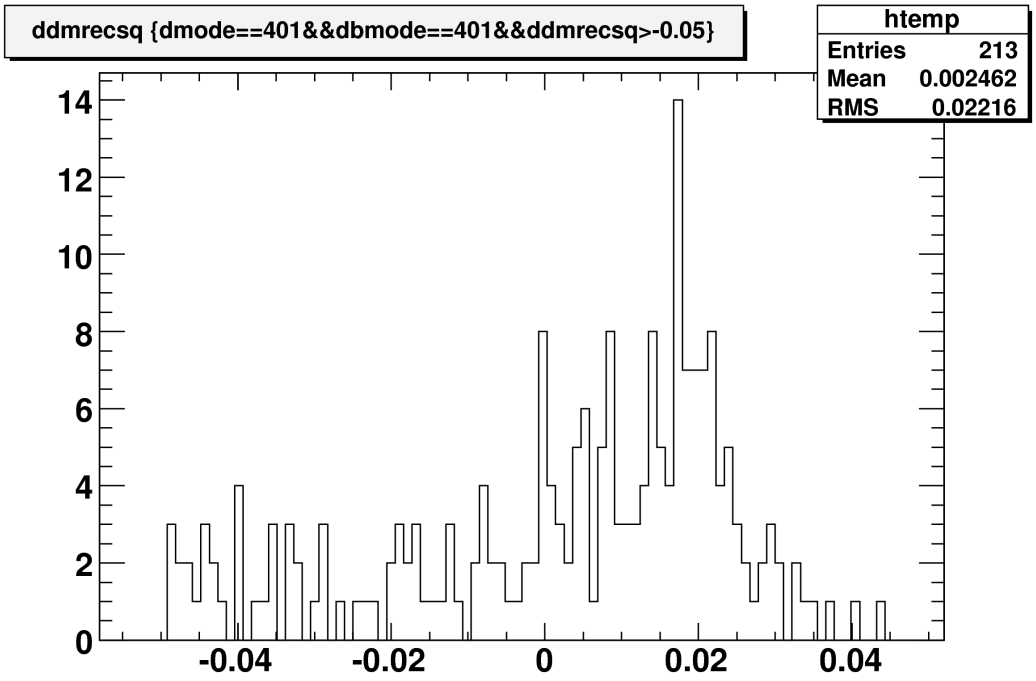
$D_s\bar{D}_s$ recoil mass

KKpi vs KKpi

Generic MC



Continuum MC

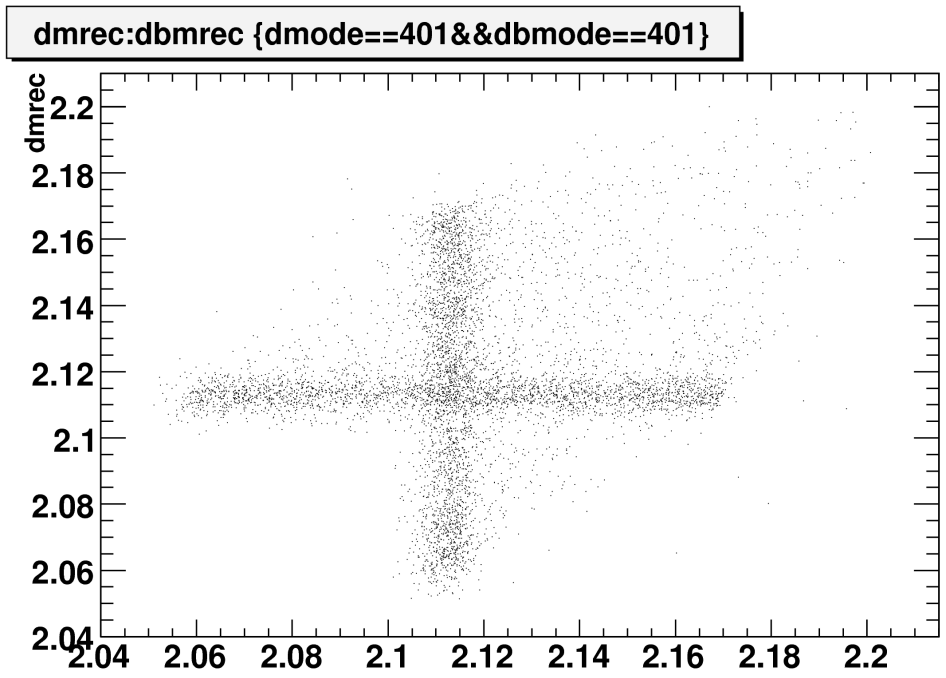


(Some modes are much worse!)

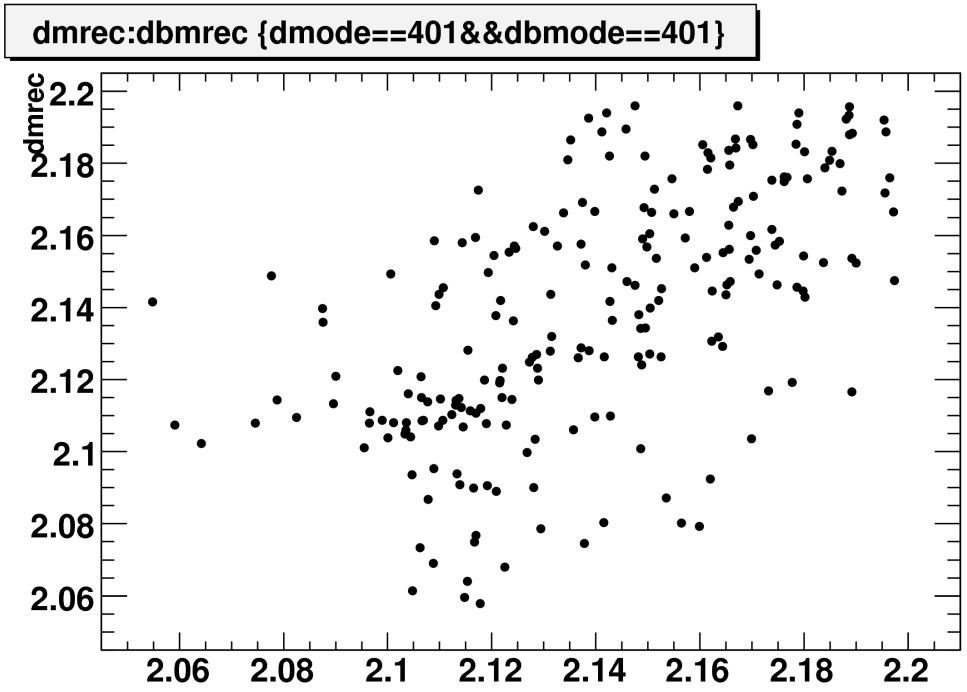
Recoil mass of each D_s

KKpi vs KKpi

Generic MC



Continuum MC



DT signal for ωπ

Nice to see...