LHCb summary

1 Week 1

- test data to analyse invariant mass of B mason assuming KKK decay, using known kaon mass
- looked at kaon/pion probabilities
- started analysing $B^{\pm} \to K^{\pm}\pi^{+}\pi^{-}$ decay
  - selection: only include $P(kaon) > 0.9$ and $P(pion) > 0.7$
  - selection: also excluded all muons
  - assigned new variables for pion and kaon variables
  - selection: pion charge sums to 0
  - found invariant mass of B mason with same technique as before
  - *what are the sidebands?*
- looked at two body resonance - intermediate decay via neutral particle
  - want to get rid of D mason decay as we only study direct decay
  - selected data of B mason mass $\pm 60\ MeV/c^2$ from mass plot - *need to implement that this cut is only applied for this section*
  - three possible intermediate decays: $\pi^{+}\pi^{-}$, $K^{+}\pi^{+}$ and $K^{-}\pi^{+}$
  - computed invariant mass for all three possible cases
  - plot under condition that charges sum to zero - reoccurring events form peak
  - found multiple peaks: D mason from $K\pi$ decay and two relatively slightly shifted peaks in both $K\pi$ and $\pi\pi$
  - applied D mason cut: reject all events with D mason mass $\pm 30\ MeV/c^2$
  - *find out what other peaks are*
  - no need to exclude muon tracks misidentified as pions - excluded muons from the start
  - *why do muon get easily misidentified as pions?*