KLM matching with CDC using HLT in DQM

Spring: David & Jim, add Avinash in Summer

Currently KLM DQM shows only KLM only quantities

Want to add a plot showing efficiency of matching KLM tracks to CDC tracks for two-muon events (for example)

Such a matching may be realized on HLT (High Level Trigger)

From Leo via Jira exchange with Kirill & Giacomo

I recommend counting the number of matching 2D KLM hits for a CDC track whose momentum exceeds 1.5 GeV/c (to guarantee that it will exit the KLM - avoid clutter from soft tracks).

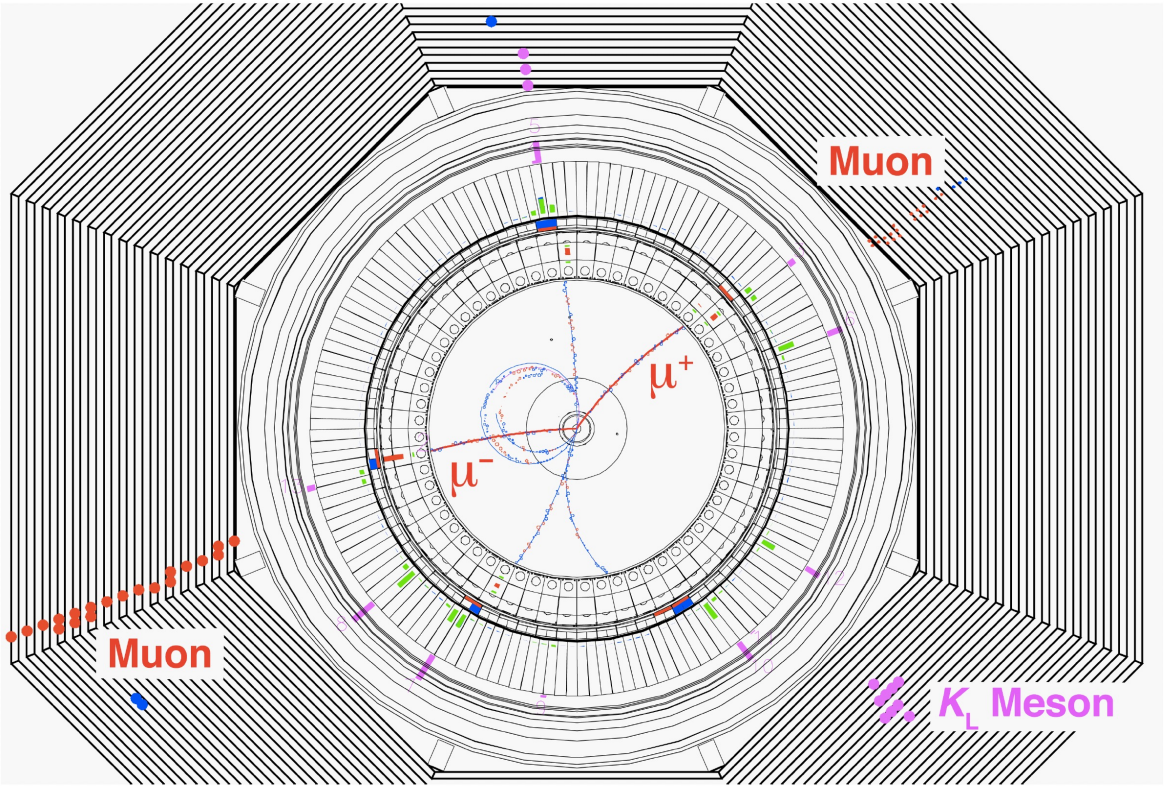
A second graph closer to physics: mean number of matching 2D KLM hits per CDC track (with $p>1.5$) versus polar angle θ

Perhaps a third graph like this except versus azimuthal angle phi. For these graphs, need to fill a TH2D (DQM doesn't allow TProfiles, I think) and then, in the "analysis" + drawing function, calculate and fill the corresponding TH1D with the calculated mean and standard deviation for each theta (or phi) bin.

KLM detects K_L mesons and muons (≈1 per event)

For example: $B^0 \rightarrow J/\psi\, K_L$ **event**

$\hookrightarrow \mu^+ \mu^-$



Initial Plan

Create a new module using KLMDQMModule as a template

Since KLMDQM takes only KLM data as input,
will need to understand how to obtain needed CDC inputs from the overall reconstruction

Then, we'll need to properly write the event() method for checking the number of 2d hits per track and filling the histograms