

On 03/17/2016 05:42 PM, Thomas Kuhr wrote:

Dear tracking group,

in the software meeting today it was discussed which backgrounds should be used in the next MC production. The question is mainly whether QED background should be included in addition to Touschek, Coulomb, and RBB. The following options were considered:

- 1) no QED
- 2) usual QED
- 3) usual QED + QED for large PXD window

The options influence the (simulation) execution time. Another factor to consider might be the effect on the tracking/vertexing performance.

Before asking the physics group what they consider the best option for

their analyses I'd like to consult you. Do the options 2 and 3

(compared to 1 and 2, respectively) led to a change in the tracking performance that you consider relevant?

the PXD has a large integration window of  $20\mu\text{s}$  so the BeamBkgMixer works in two steps:

- a) add background in the window  $-1000\text{ ns}$  to  $+800\text{ ns}$
- b) add background for PXD in the window  $-10\mu\text{s}$  to  $10\mu\text{s}$  except for the central window from a. This uses separate pxd only background files.

Option 2 would only include a), option three would be a) and b).

Option 2 gives you the correct background in the SVD plus some in the PXD for the central time window. Correlations between SVD and PXD are correct but PXD background level will be lower than expected.

Option 3 gives you the full PXD background but as this will require digitization of a lot of PXDSimHits this has a big impact on execution time.

# Situation Recap

- QED background in the SVD has moderate impact
- QED background in the PXD kills the VXDTF
  - Foreseen procedure:
    - 4 layer tracking, Rols, extension of 4 layer tracks to 6 layers
    - 6 layer tracking on reduced amount of background with cluster analysis etc.

- Currently implemented use?

- Full 6-layer tracking as we so far ignore QED?

→ We can handle Option 2, but Option 3 requires things, that we currently don't have.

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