Update SiD background simultations

Pair background:

- Hit time
- Occupancy plots

Other background sources:

- Neutrons from dumps
- Muon from spoilers

Pair background – new features

New features in program:

- Hits in trackers can be analysed
- Hit time:
  - Absolute time = interaction time + bunch/train spacings

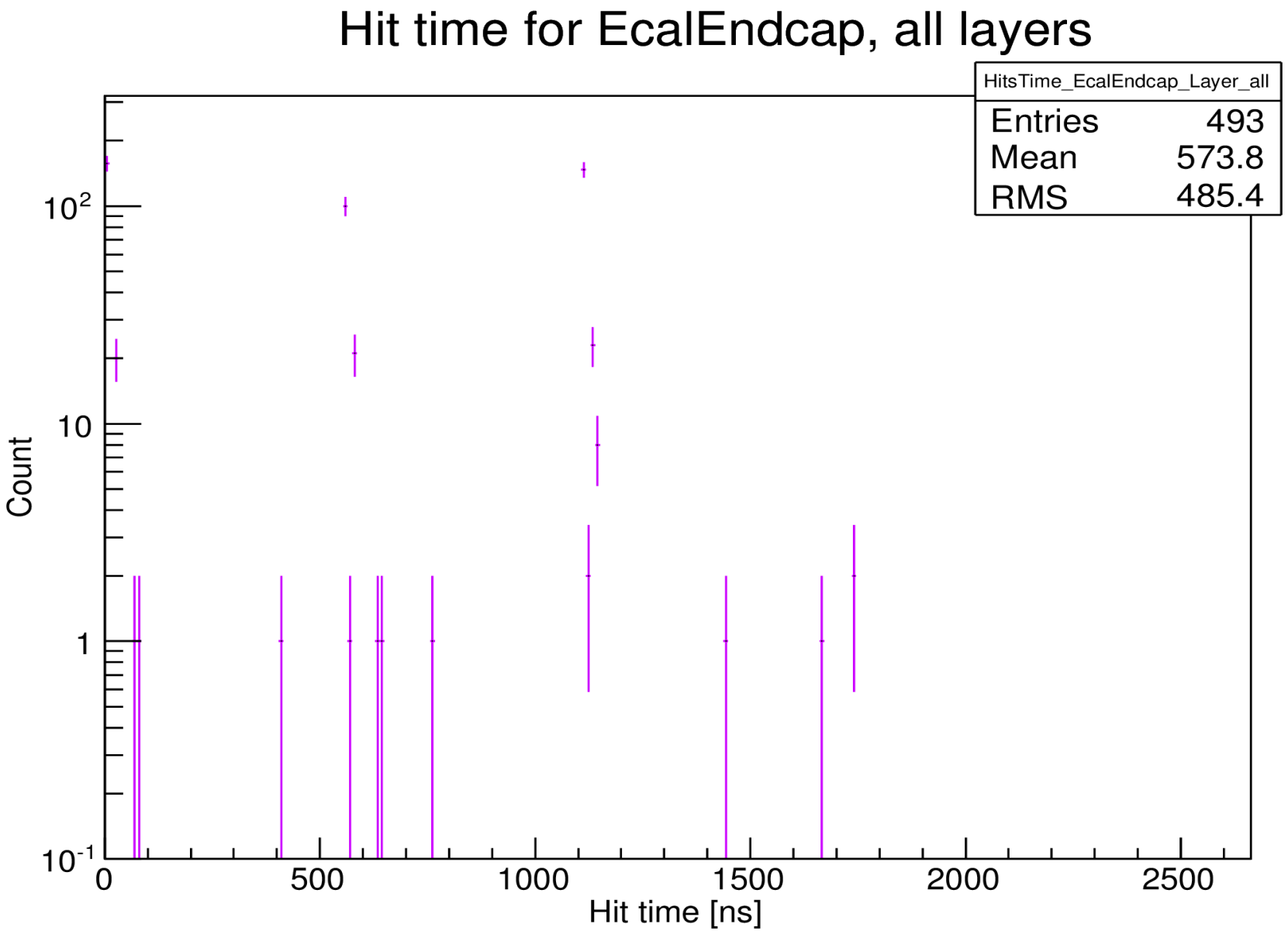
Pair background – hit time

Hit time =

- time of the hit wrt interaction time at t = 0ns (for TRACKERS)
- time of the i-th contribution to the hit (for CALOS)

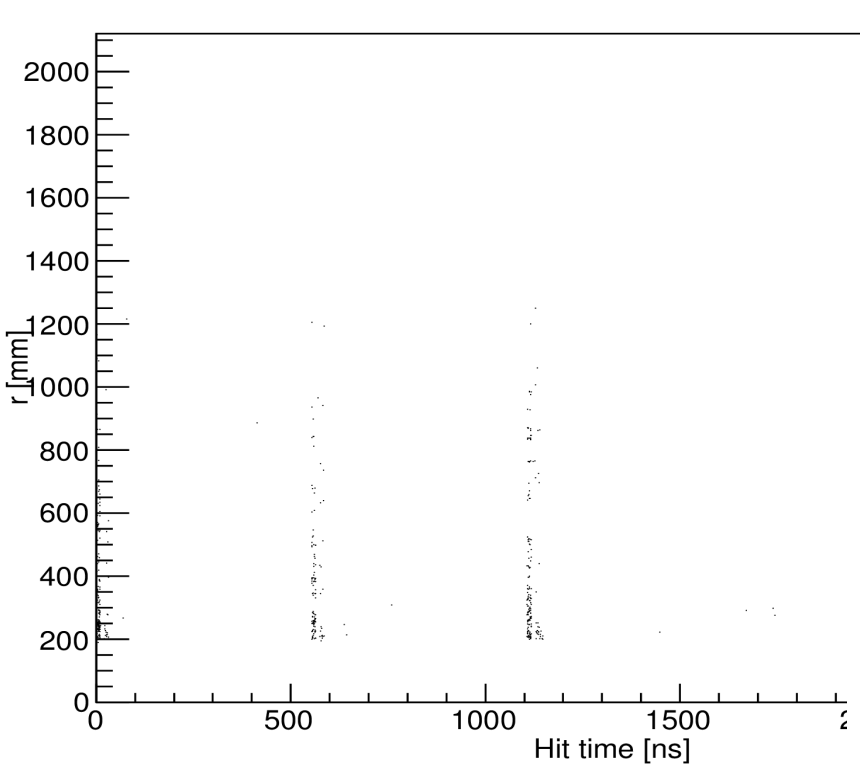
Added bunch (554ns) and train (200 ms) spaces to the absolute time of the bunches

Pair background – hit time

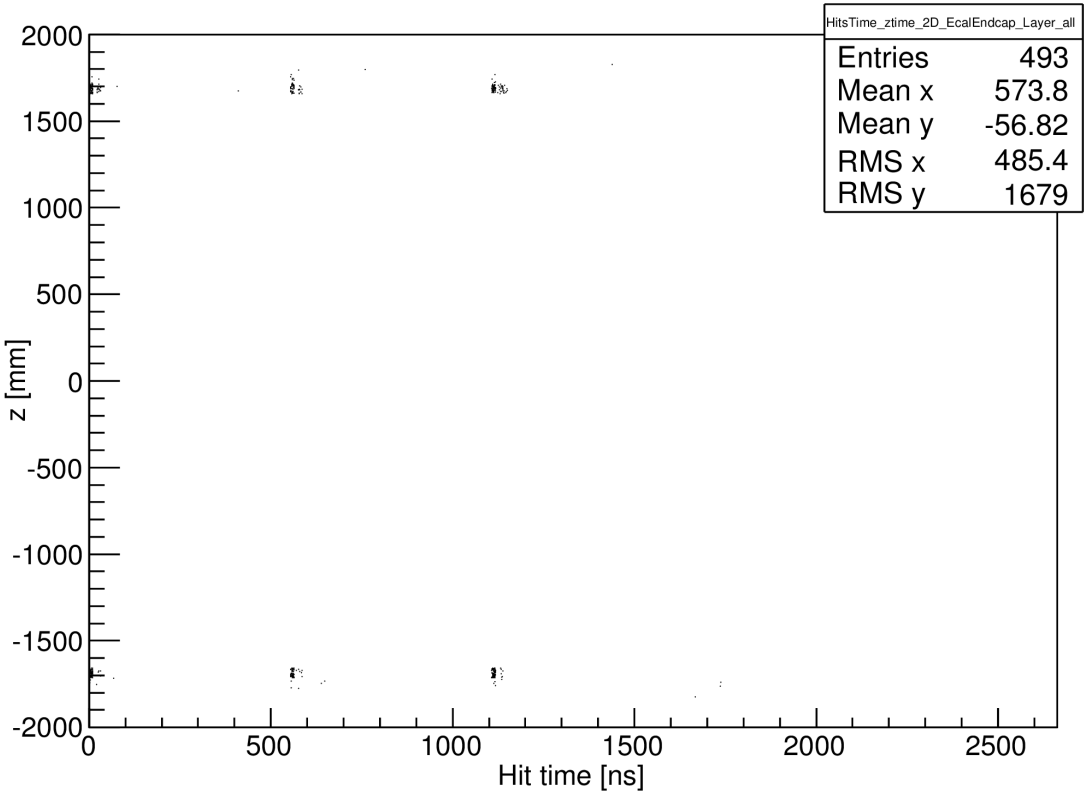


Pair background – hit time

Radial position of hits over hit time for EcalEndcap, all layers



z position of hits over hit time for EcalEndcap, all layers

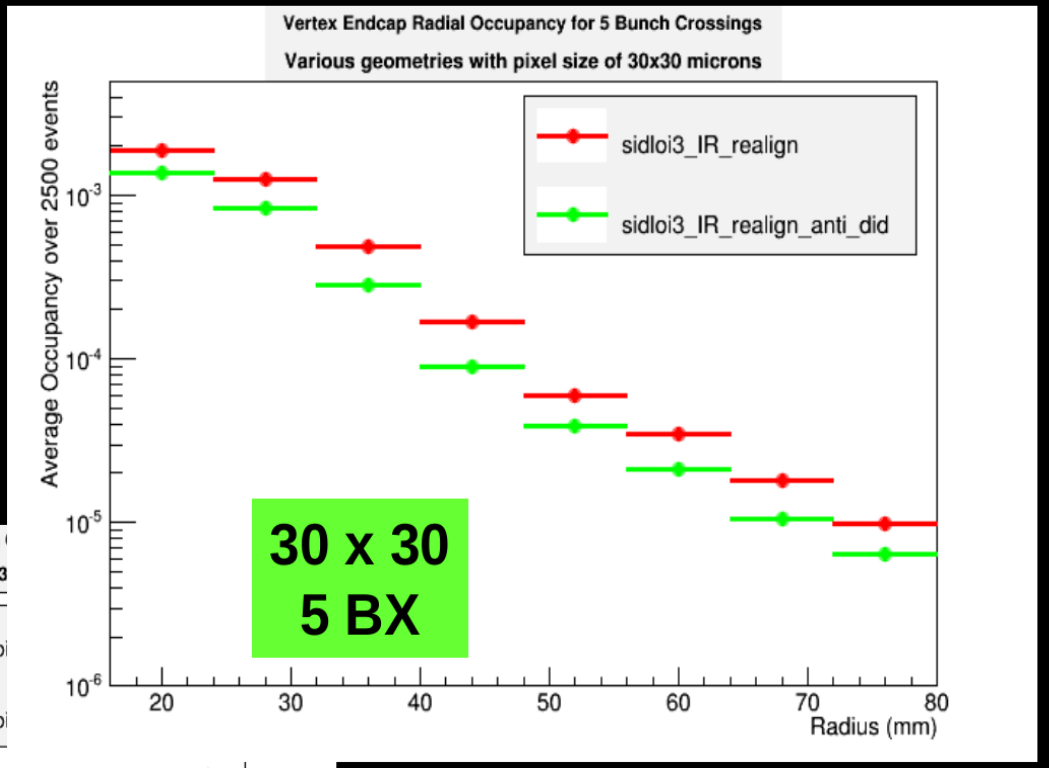


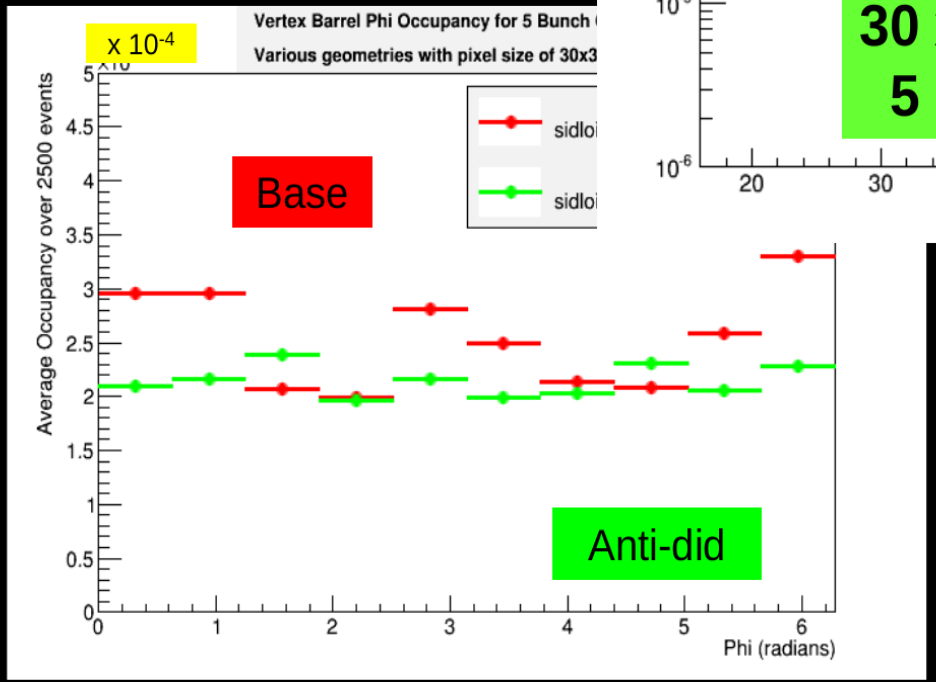
Pair background – Occupancy plots

Comparison sidloi3_realign w and w/o antidid

Vertex Occupancy Dependence on Anti-did Field

Plug is in place!

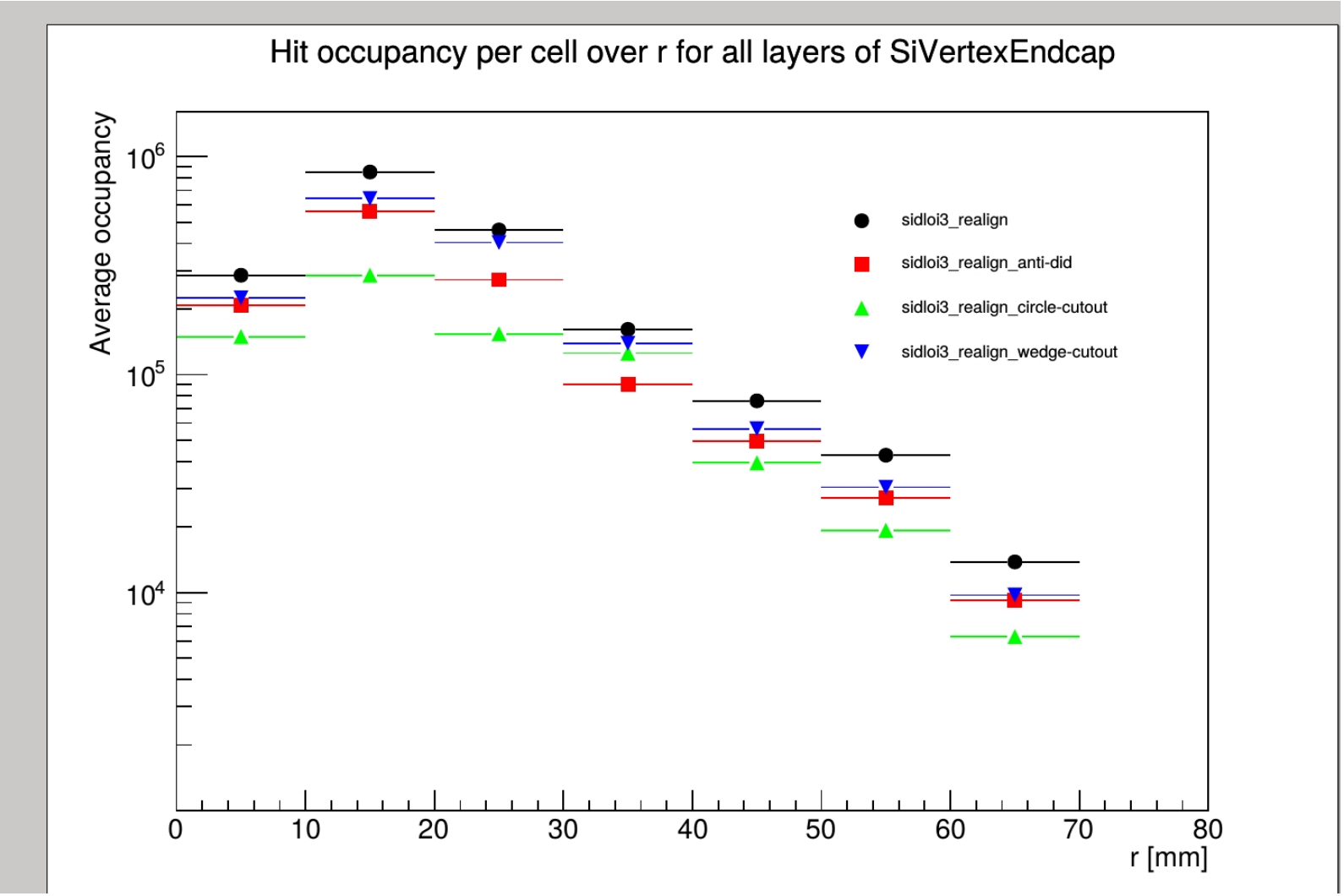




Anti-did field generally improves occupancy in barrel and thoroughly improves occupancy in endcap

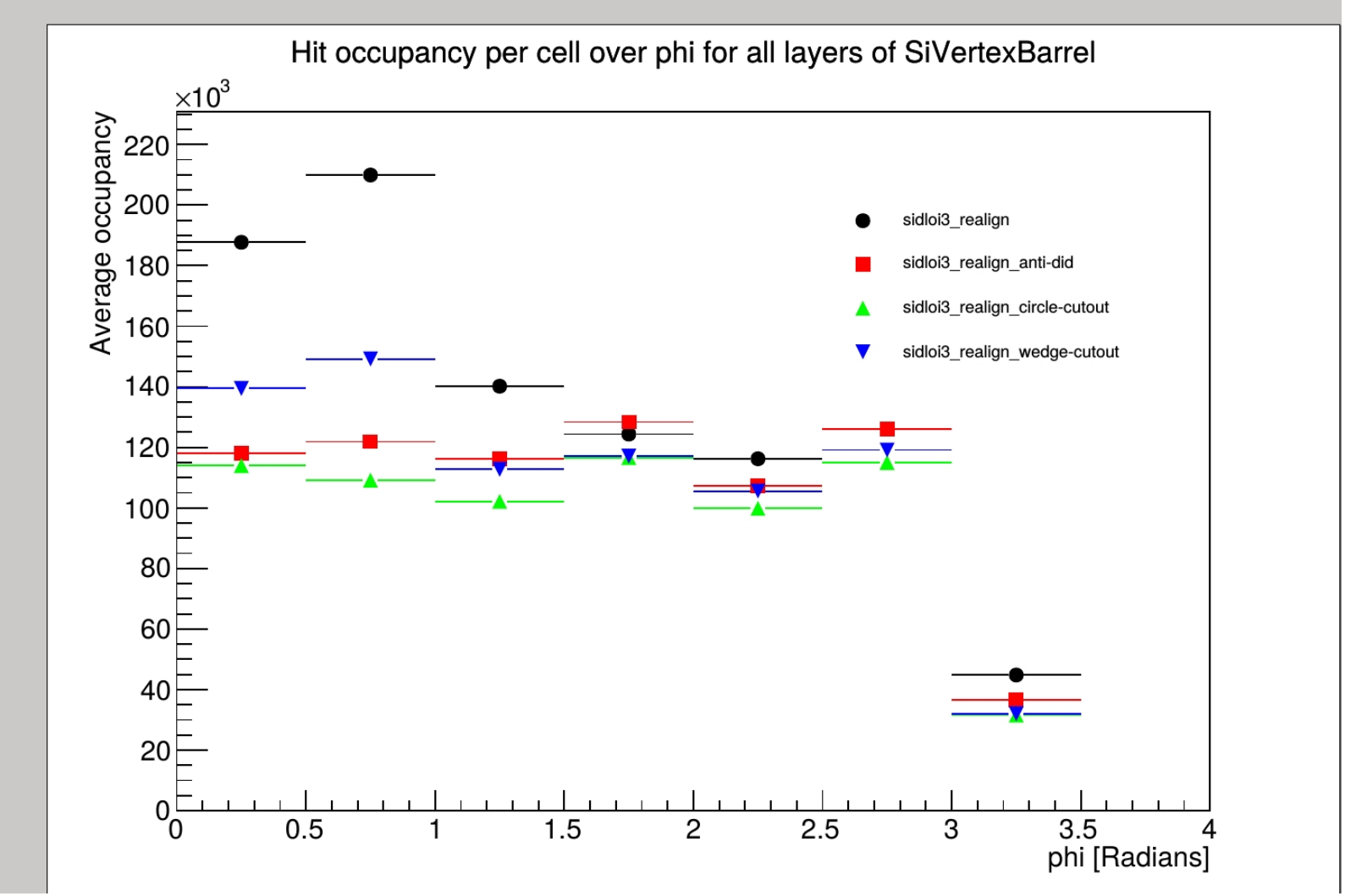
Pair background – Occupancy plots

Comparison sidloi3_realign w and w/o antidid



Pair background – Occupancy plots

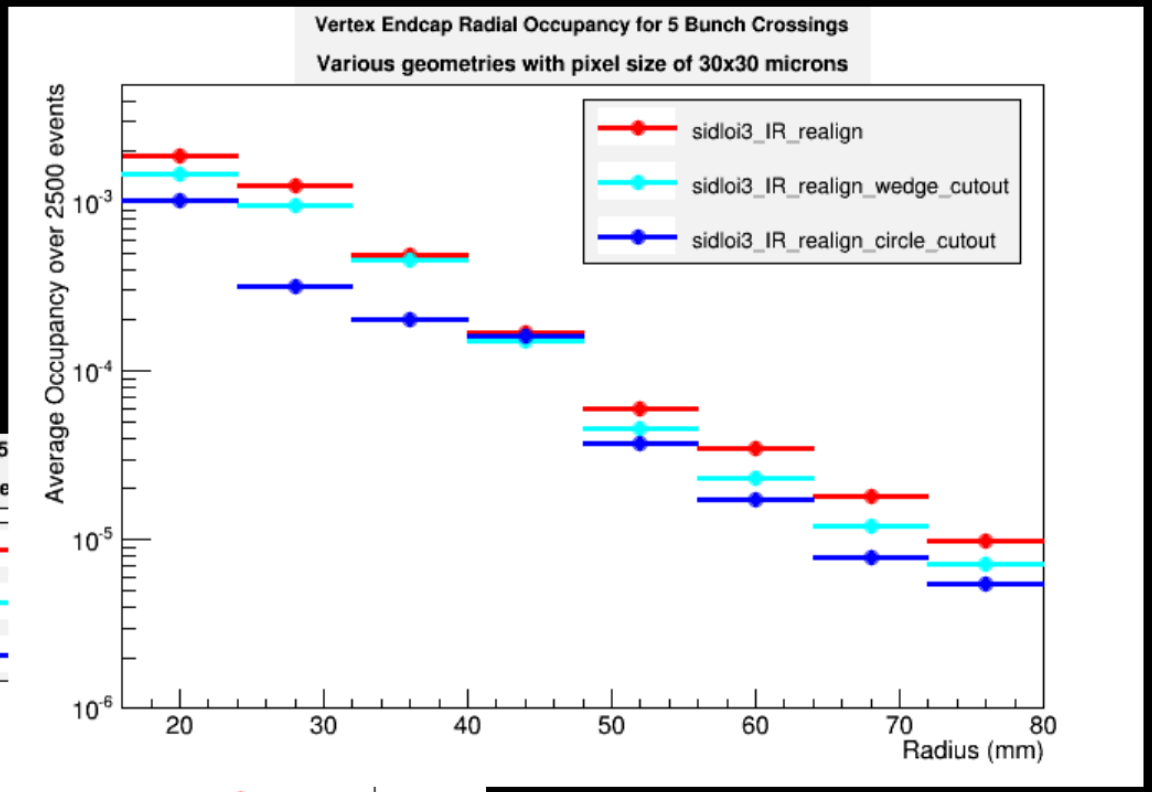
Comparison sidloi3_realign w and w/o antidid

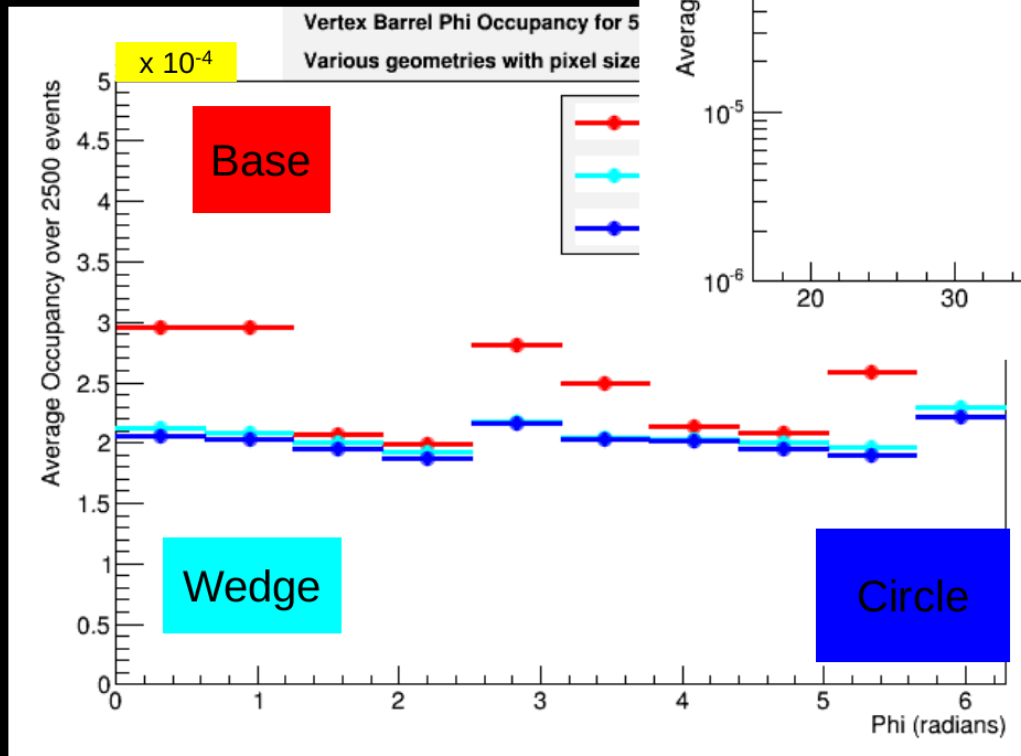


Pair background – Occupancy plots

Comparison sidloi3_realign w and w/o antidid

Occupancy Dependence on Plug Geometry





As expected, occupancy gets progressively lower as more of the BeamCal plug is cut away

Other background sources

Neutron bkg from dumps

- Glen White will join Benno List and me on working on the FLUKA model of the Extraction lines
- Intensified effort from March on

Muon bkg from spoilers

- Glen White will revisit the old Fortran code for generating the muon background
- He will pass the muon sprectra to me when finished