Background studies for the ILD vertex detector

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Characte

- GuineaPig 0.7.4-

  e^+e^- pairs

  bremsstrahlung phot

  spent beam

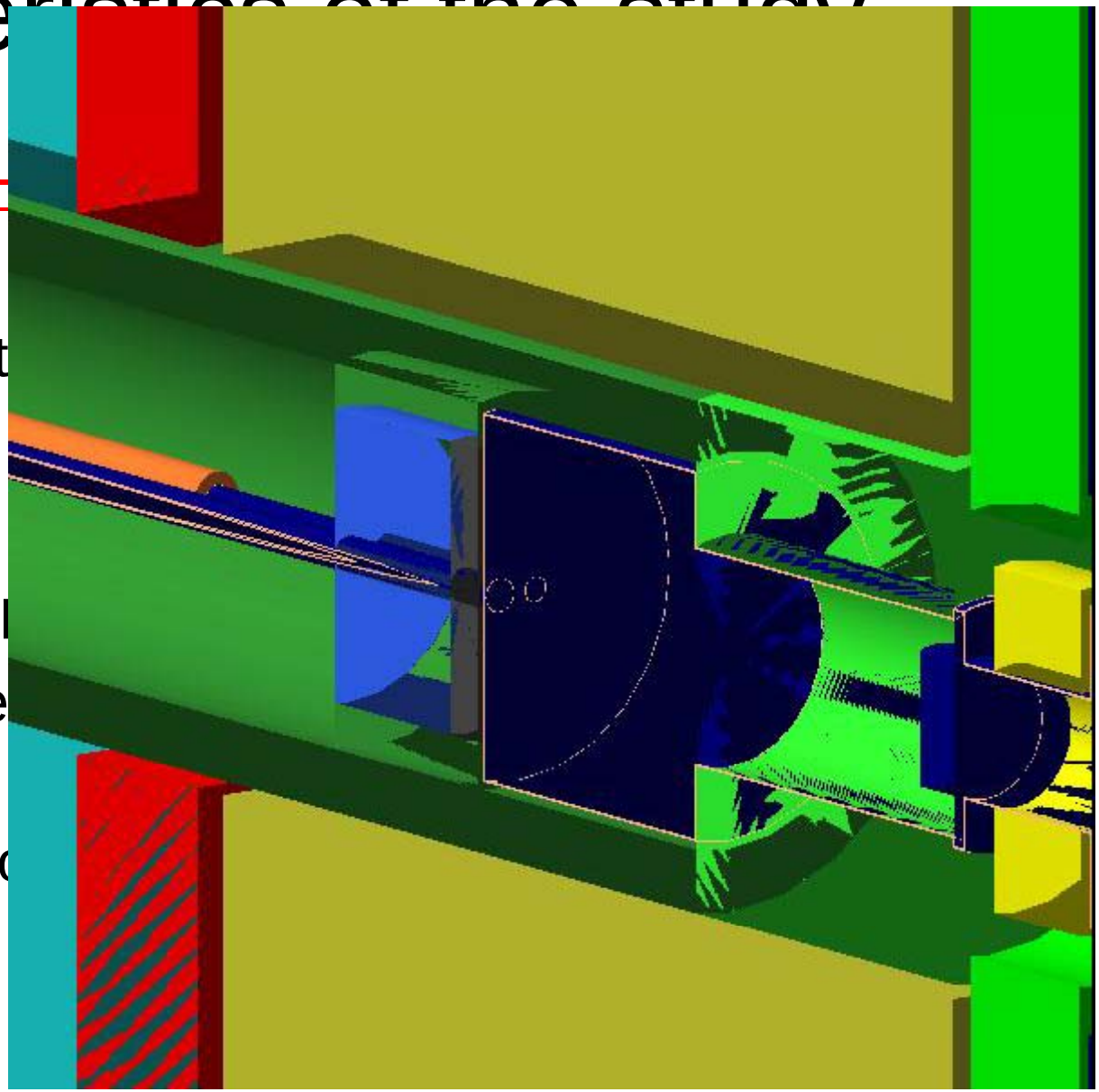
- Mokka-06-06

  detector model LDCI

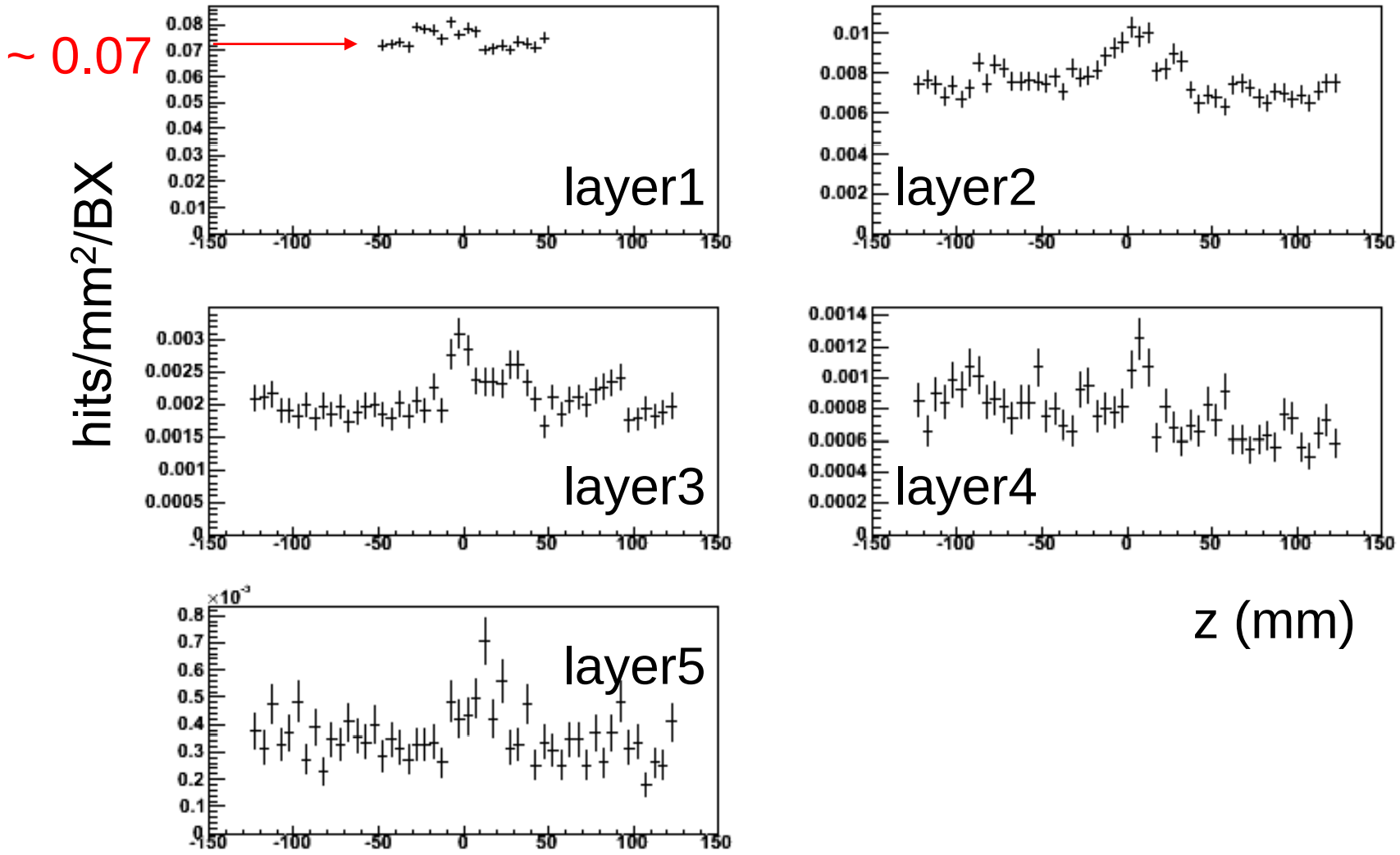
  VXD_side_band_ele

  rangeCut 1mm

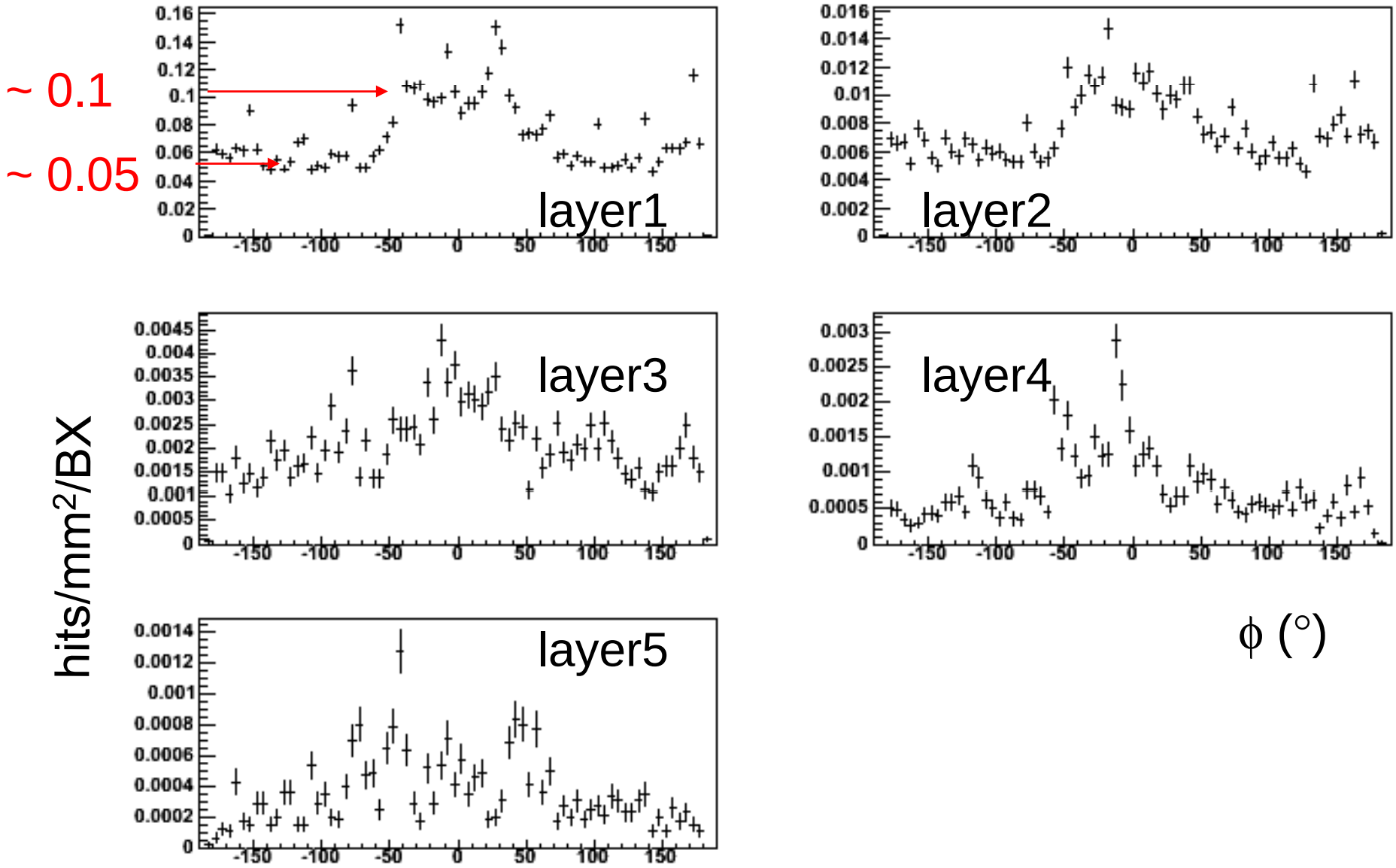
  LorentzTransformatic



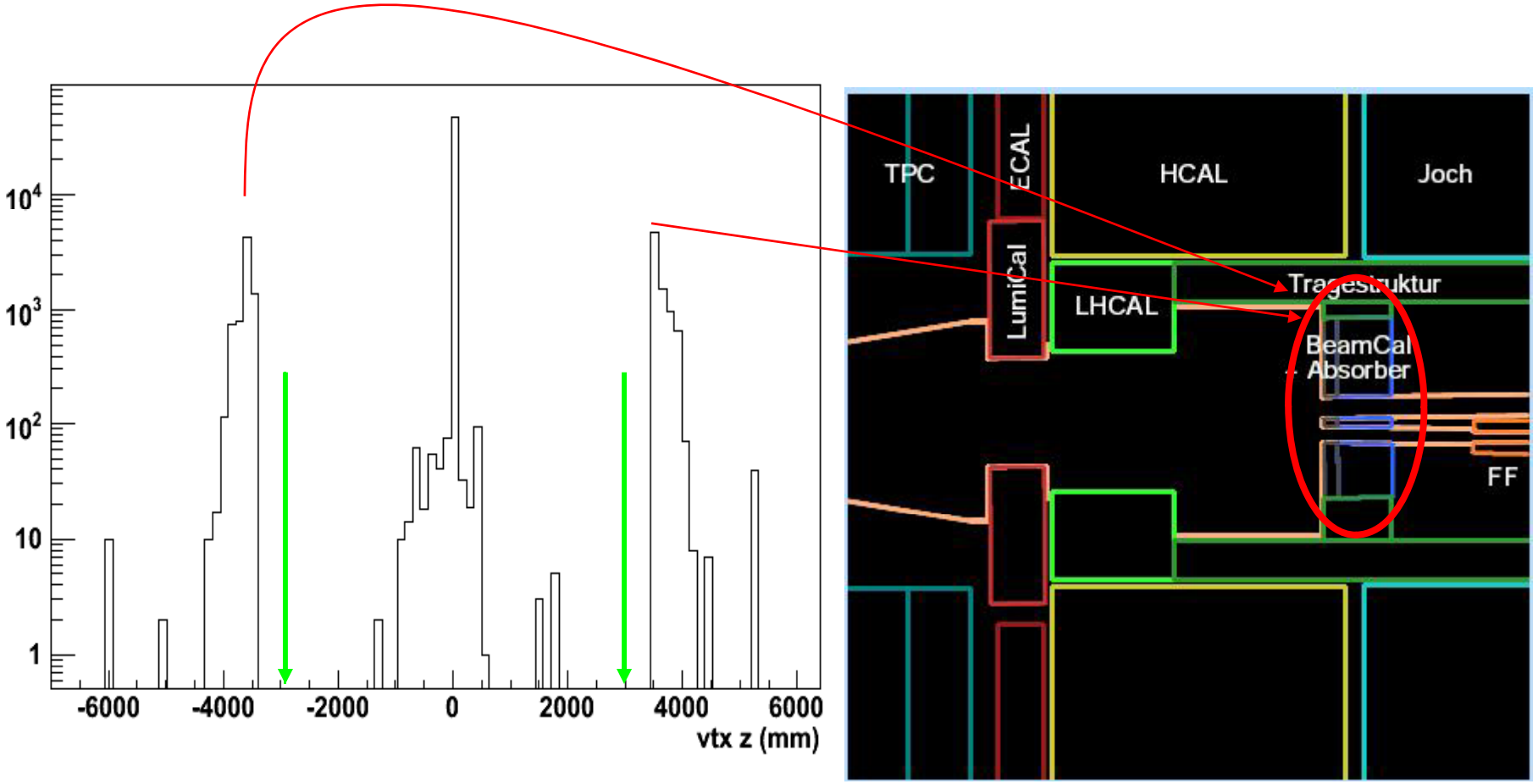
e^+e^- pairs background in z ...



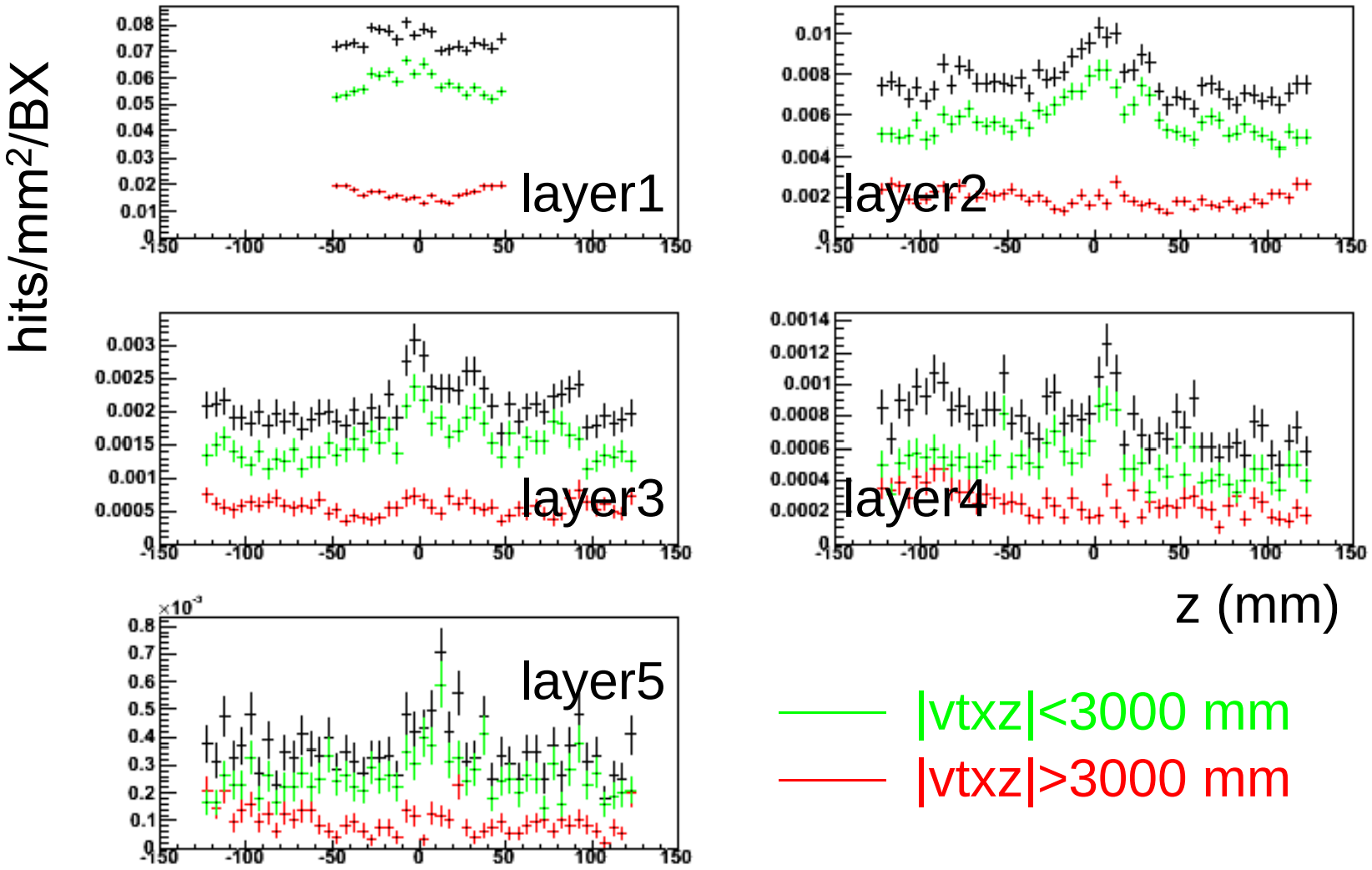
…and ϕ



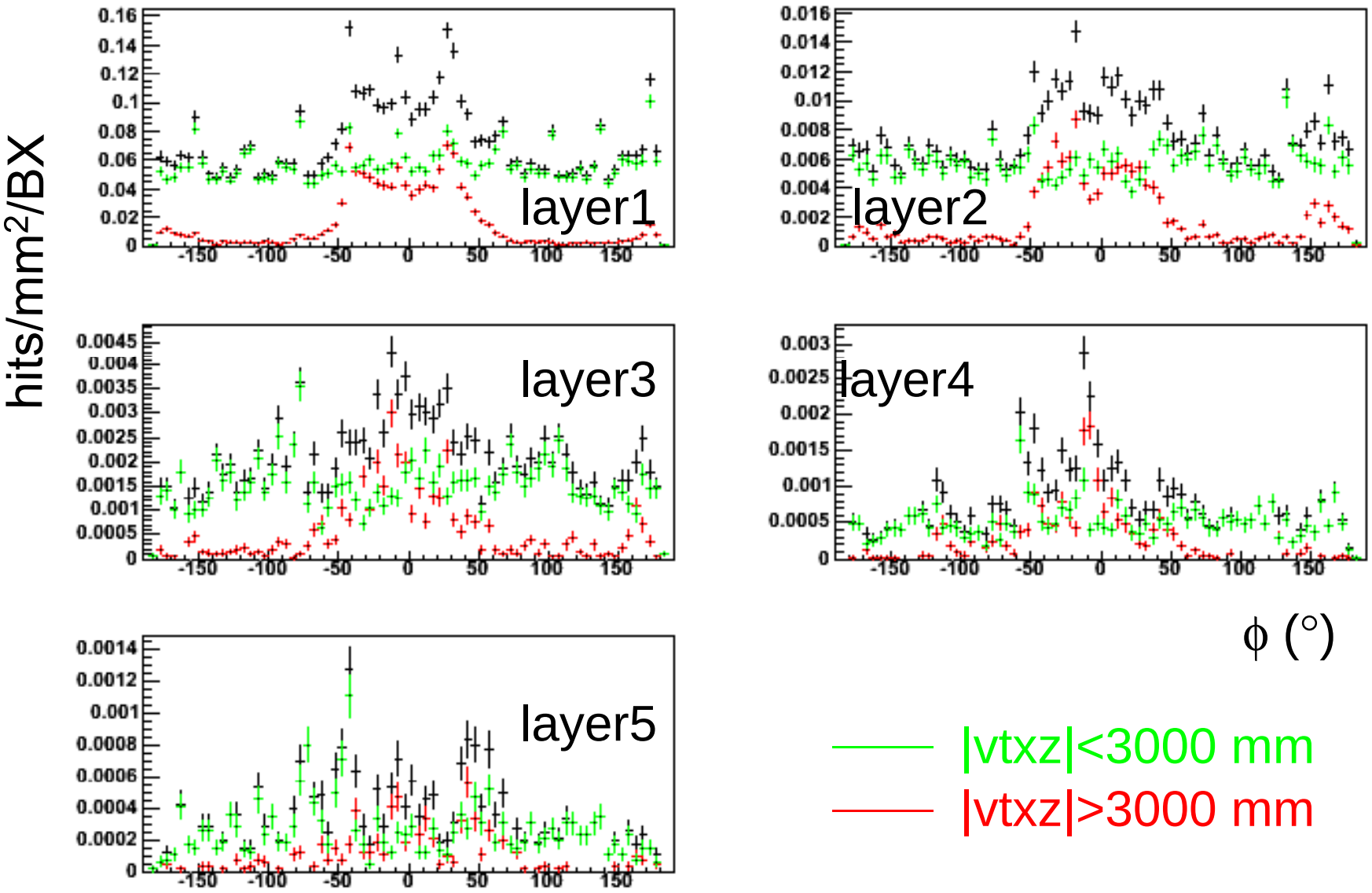
vtx-*z* of particles hitting the VTX



Cut on |vtx z| distribution in z…



…and ϕ


hits/mm²/BX
layer1
layer2
layer3
layer4
layer5
ϕ (°)
|vtxz|<3000 mm
|vtxz|>3000 mm

beamstrahlung photons (preliminary)

out of 50 BX

(~2×10^7 generated particles)

no hits in the VTX

neither direct nor indirect

spent beam
(very very preliminary)

~ 0.04 hits/mm^2/BX on layer1

(~50% of pairs contribution)

BUT

study out of only 1/20th of BX

(due to extremely long simulation time)

Conclusion

- Pairs:
  - all elements along the beam line
- Beamstrahlung γ: further study
- Spent beam: "
- Bhabbha, …