A quick Look to Background in ECAL (beamstrahlung)

SuperB Generla Meeting
(Backgrounds session)
SLAC
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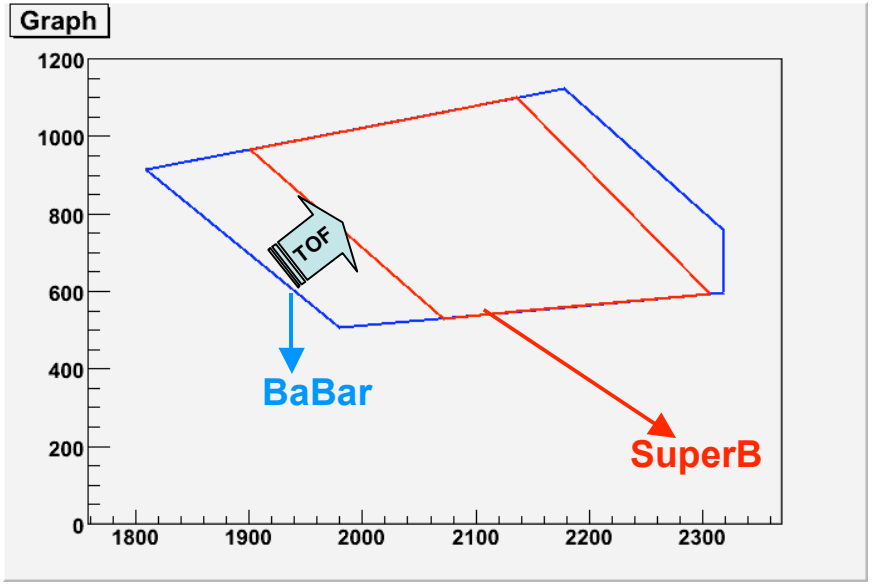
SuperB ECAL full simulation (Bruno)

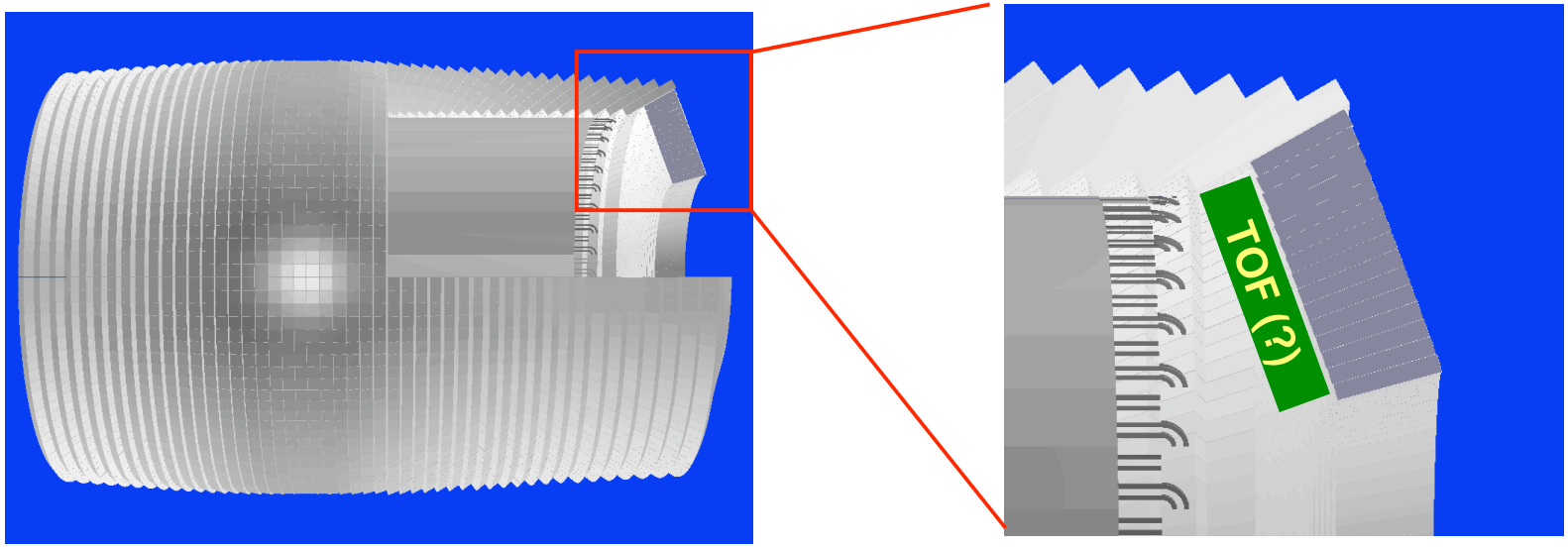
All the results are very preliminary and all the details need to be checked with more care

Very quick look to a small sample of beam-strahlung background

Fwd ECAL Geometry Envelop

- Fill the same BaBar angular region but
  - leave space for TOF: ΔZ = (100 mm)*cos(22.7)
  - Xtals material : LSO (LYSO)
    - Xtal depth = 200 mm (~17.5 X_0)



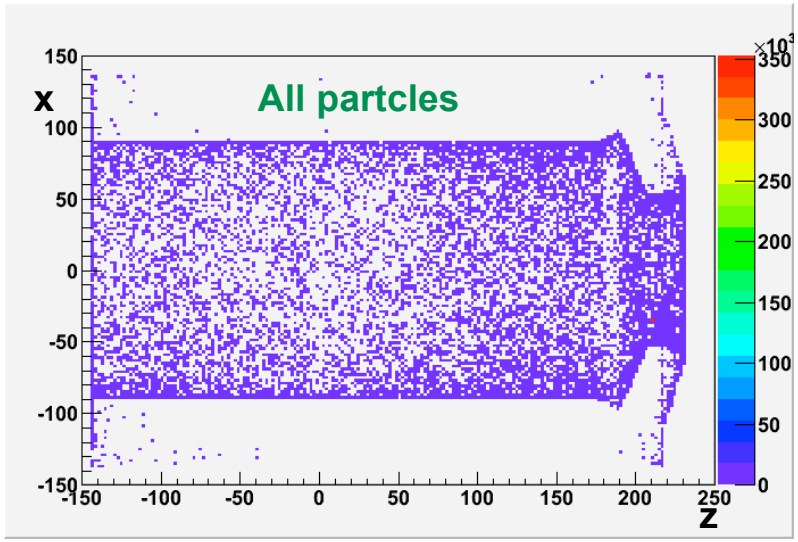


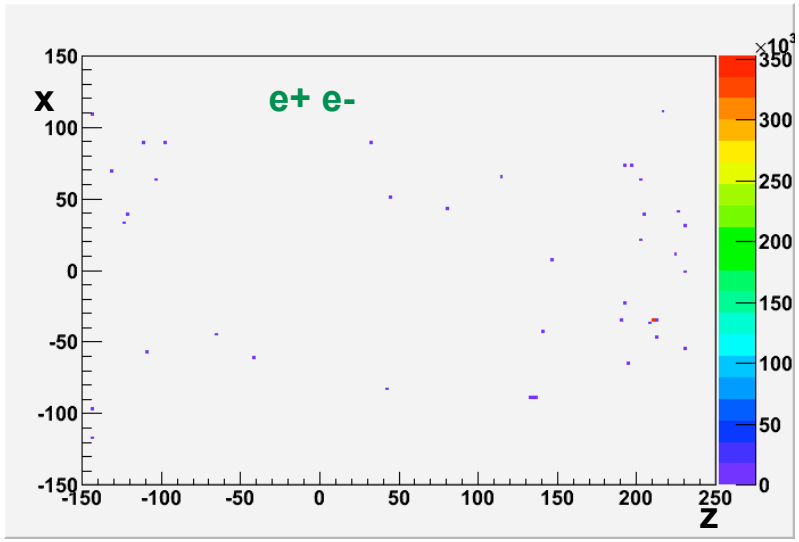
Background

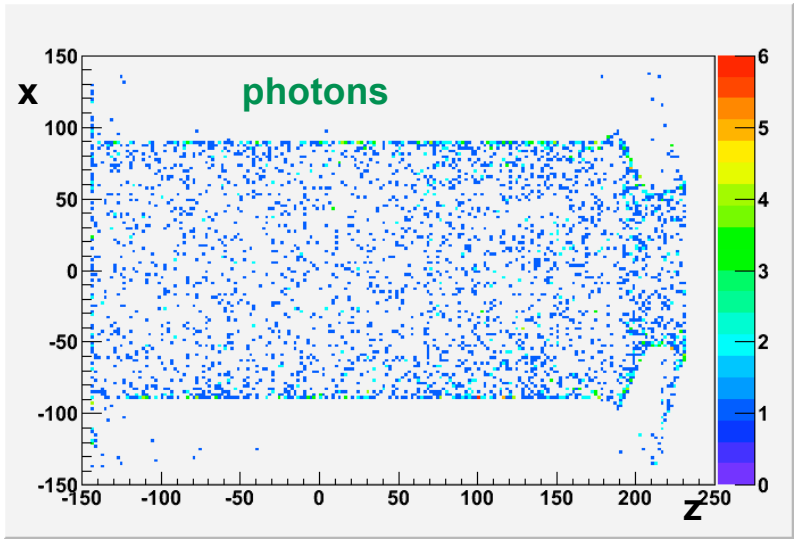
- Data sample
  - 1400 beam-strahlung events
  - Corresponding to 6.1 μs of SuperB run

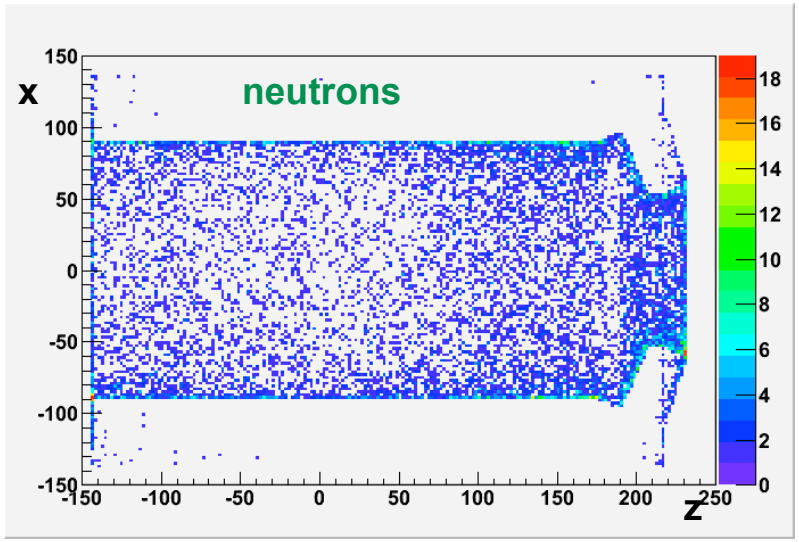
- Warnings
  - The sample has been generated with an ol vesion of the code
    - 15 rings in the encap
    - Bug to a bug in the ECAL recontruction code : no phi index available for calòorimeter crystals

Backgrond partcles entering the EMC volume









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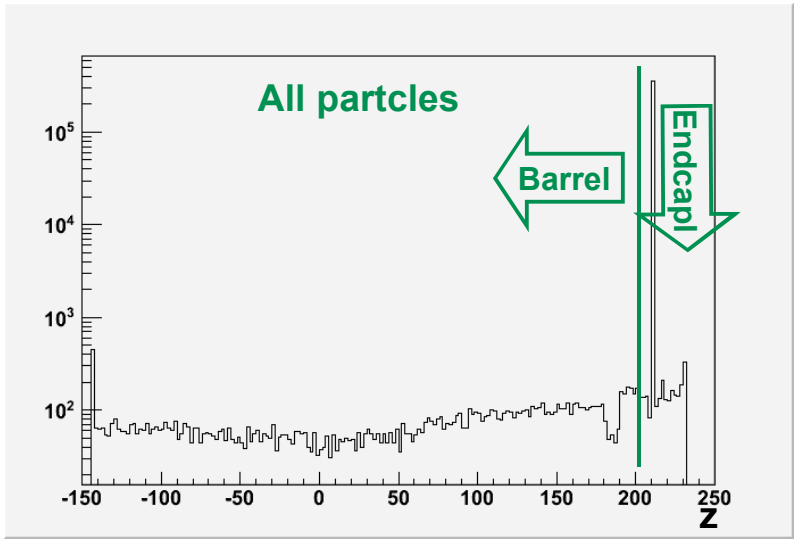
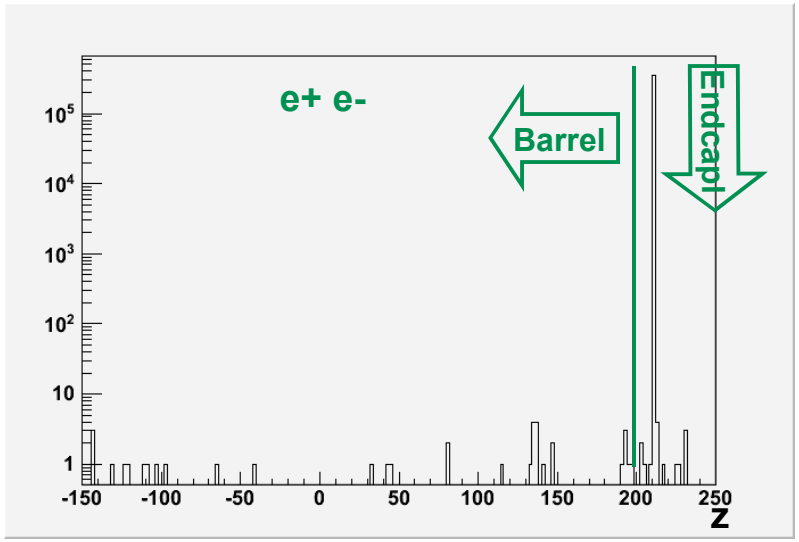
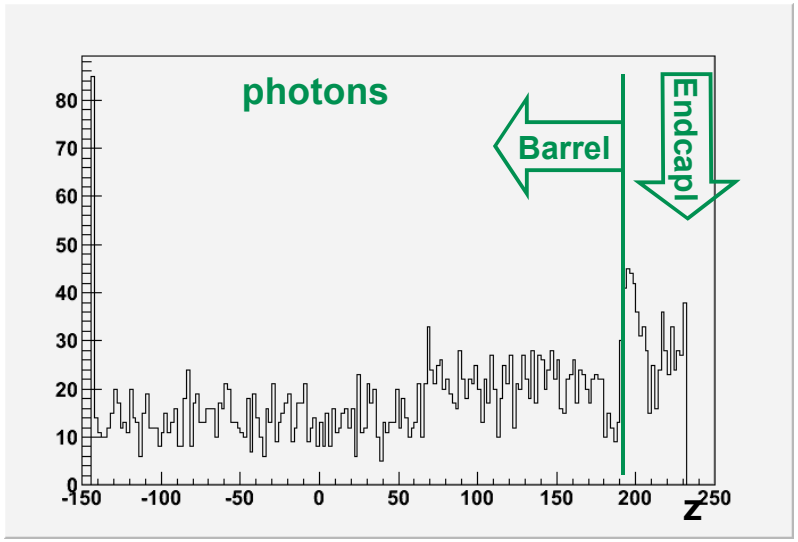
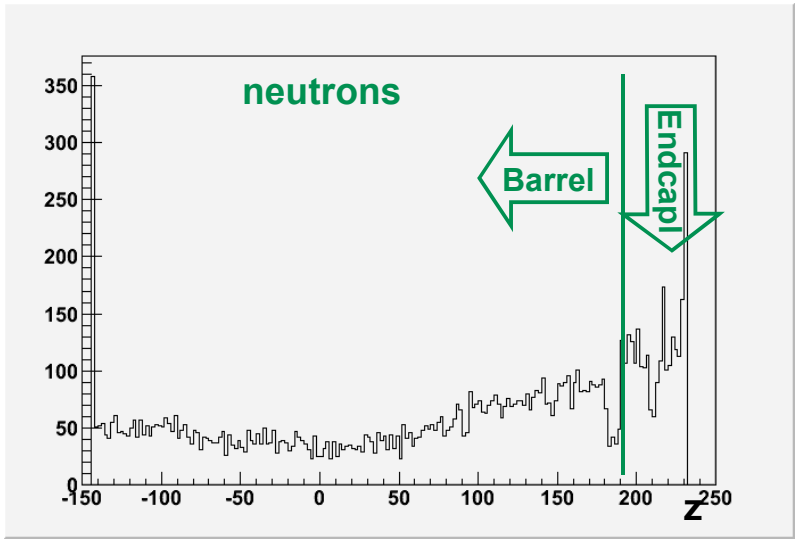
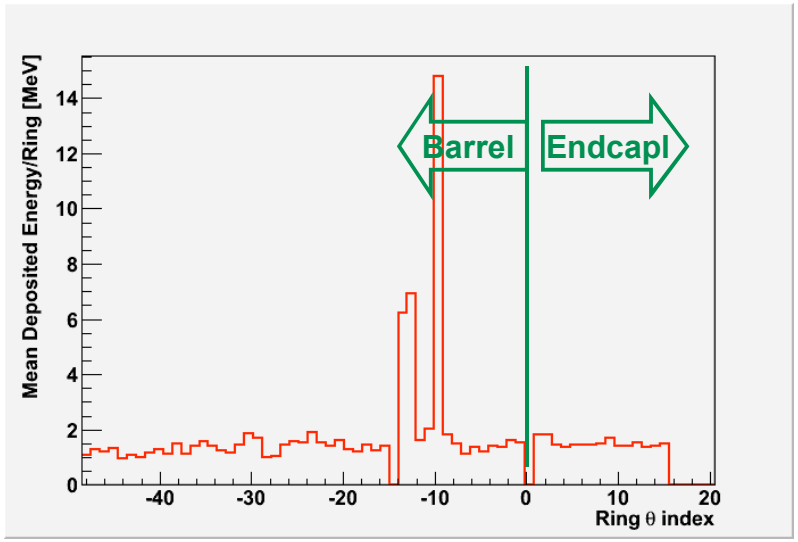






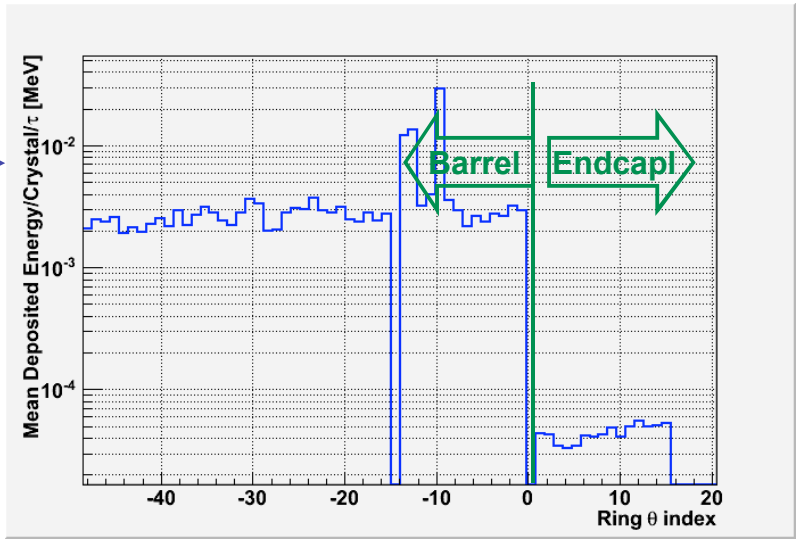


Deposited energy in background events



Mean Energy deposit per crystal in one decay constant

- CsI : 64% 680 ns + 36% 3.34 μs
- LSO 40 ns



Conclusions

- Some things need to be understood better
  - Electron position
  - Energy deposit vs Theta
- Background energy deposit seems not to be an issue
  - Need to compute particles rate
- Need to study where tracks entering the ECAL volume are coming from