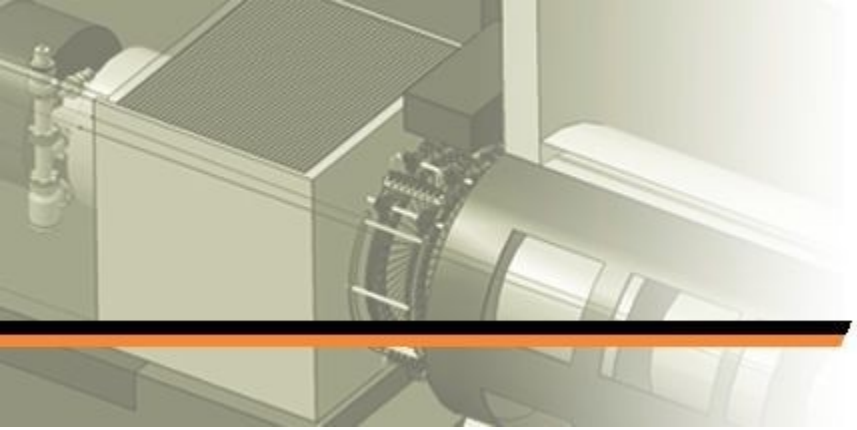


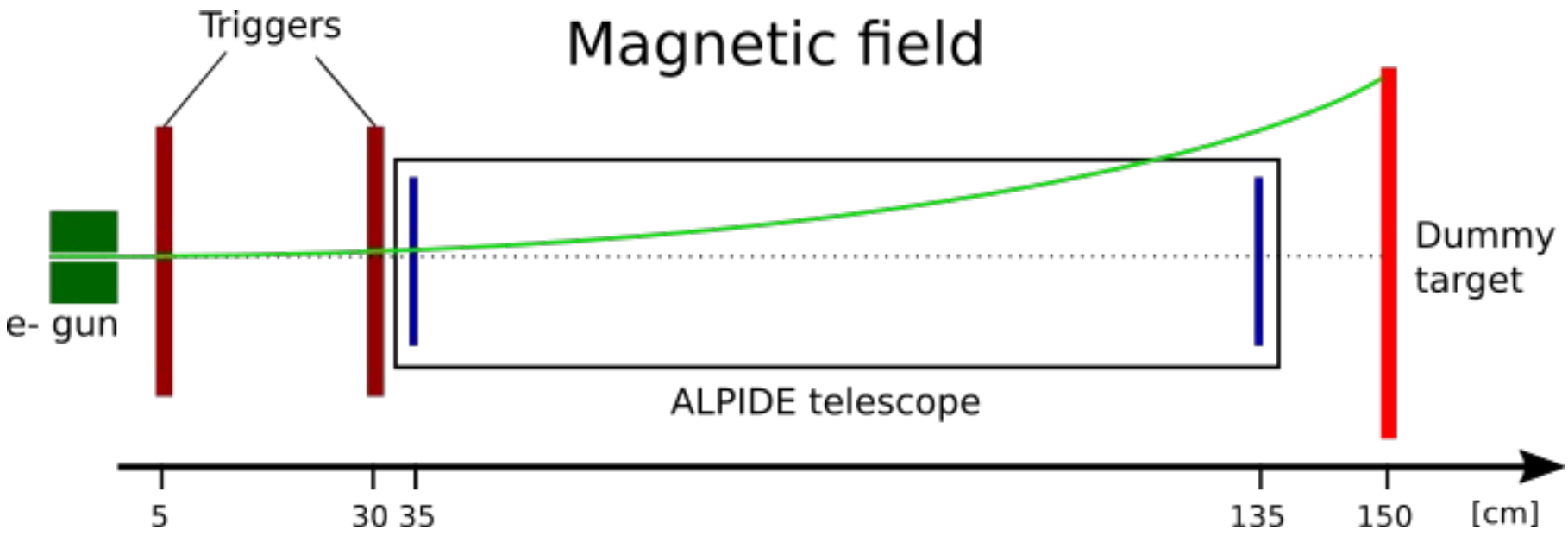
FCAL Collaboration
High precision design

Magnetic field in TB19

Ivan Smiljanić

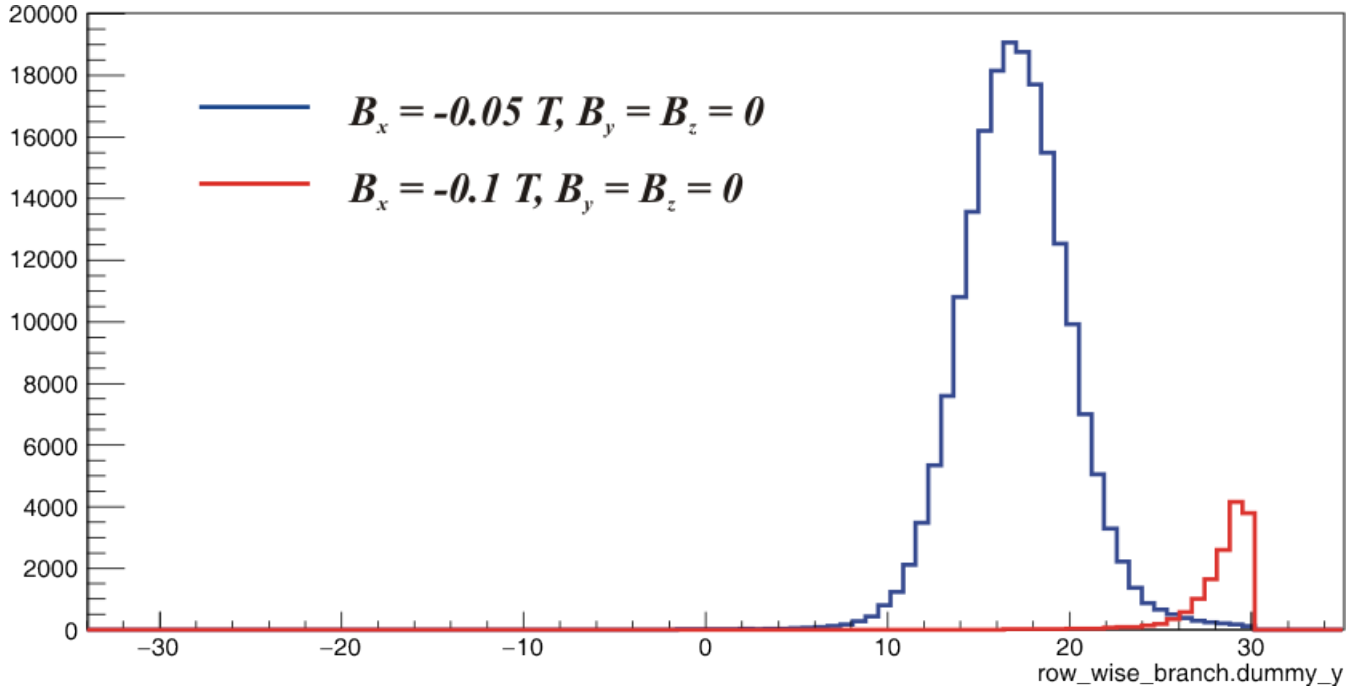
Vinča Institute of Nuclear Sciences

Geometry setup



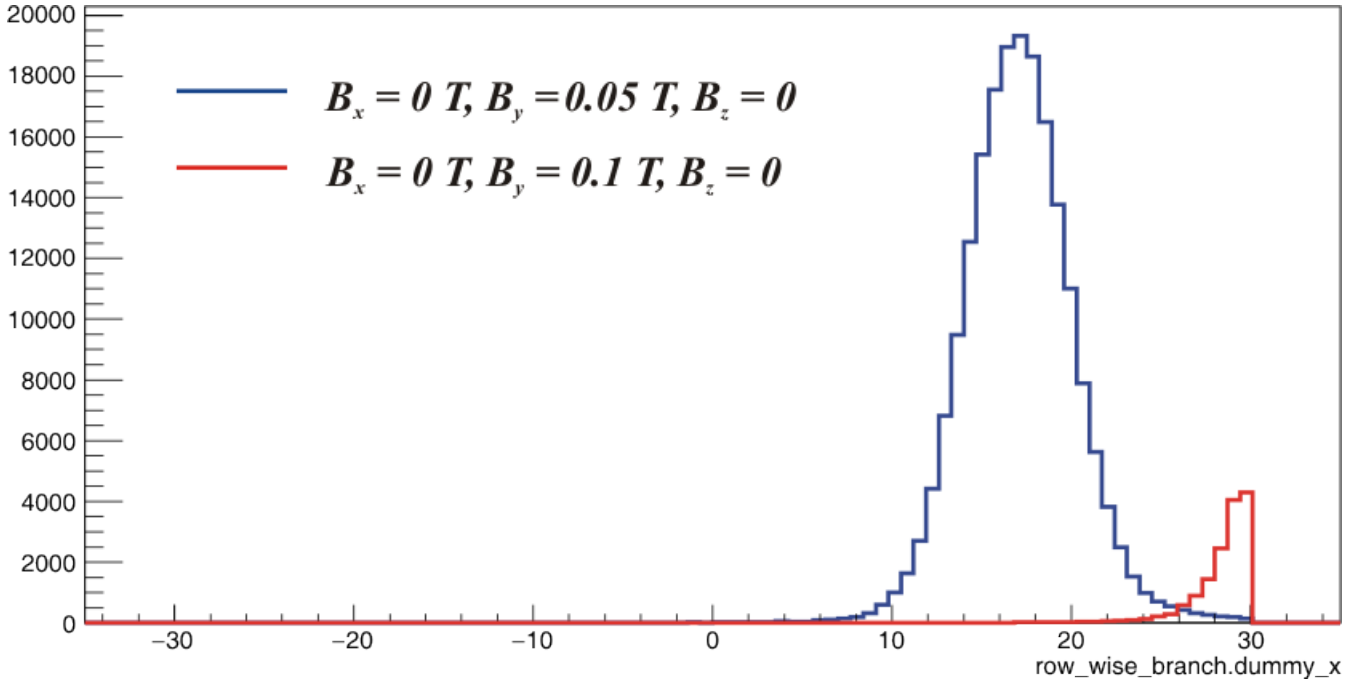
Tested:

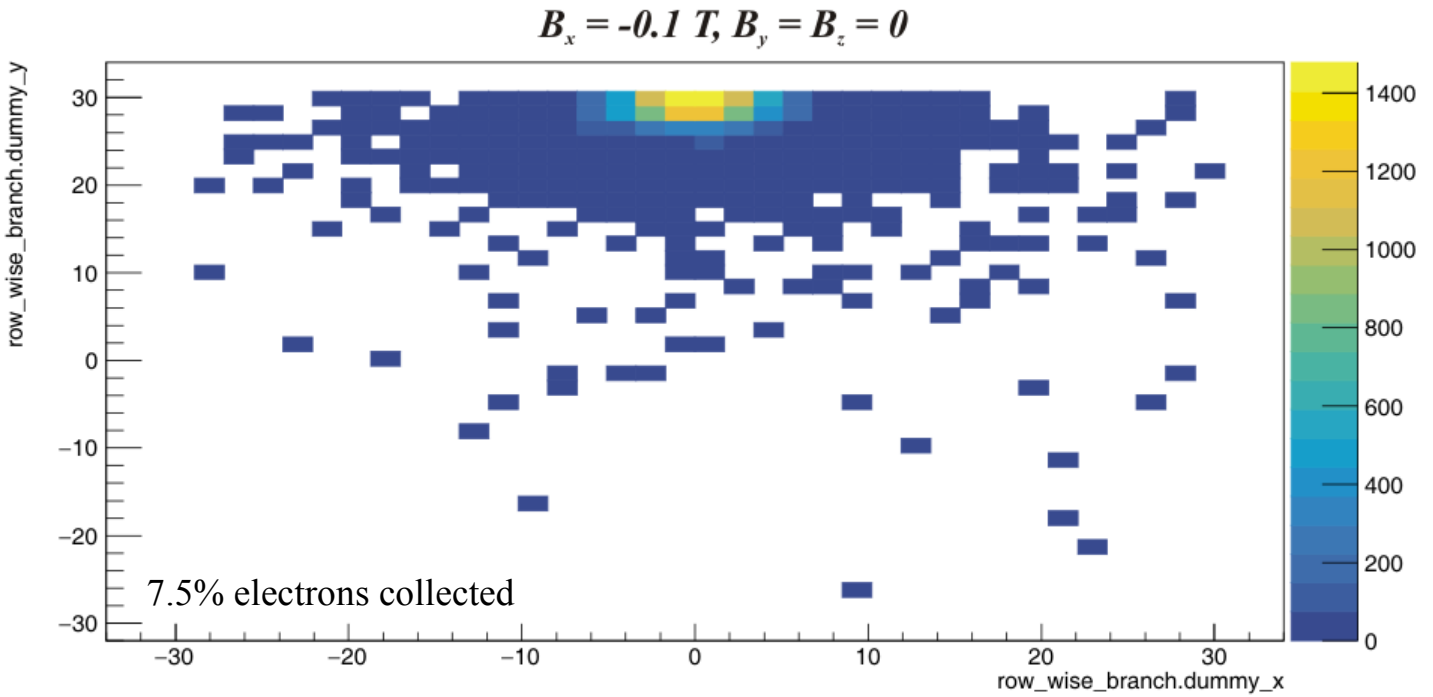
- electron energy: 1 GeV, 5 GeV
- magnetic fields: 0.05 T, 0.1 T, 0.3 T, 0.4 T, 0.5 T, various configurations
- only air (important for multiple scattering)
- readout: first telescope plane, dummy



$E_e = 1\ GeV$

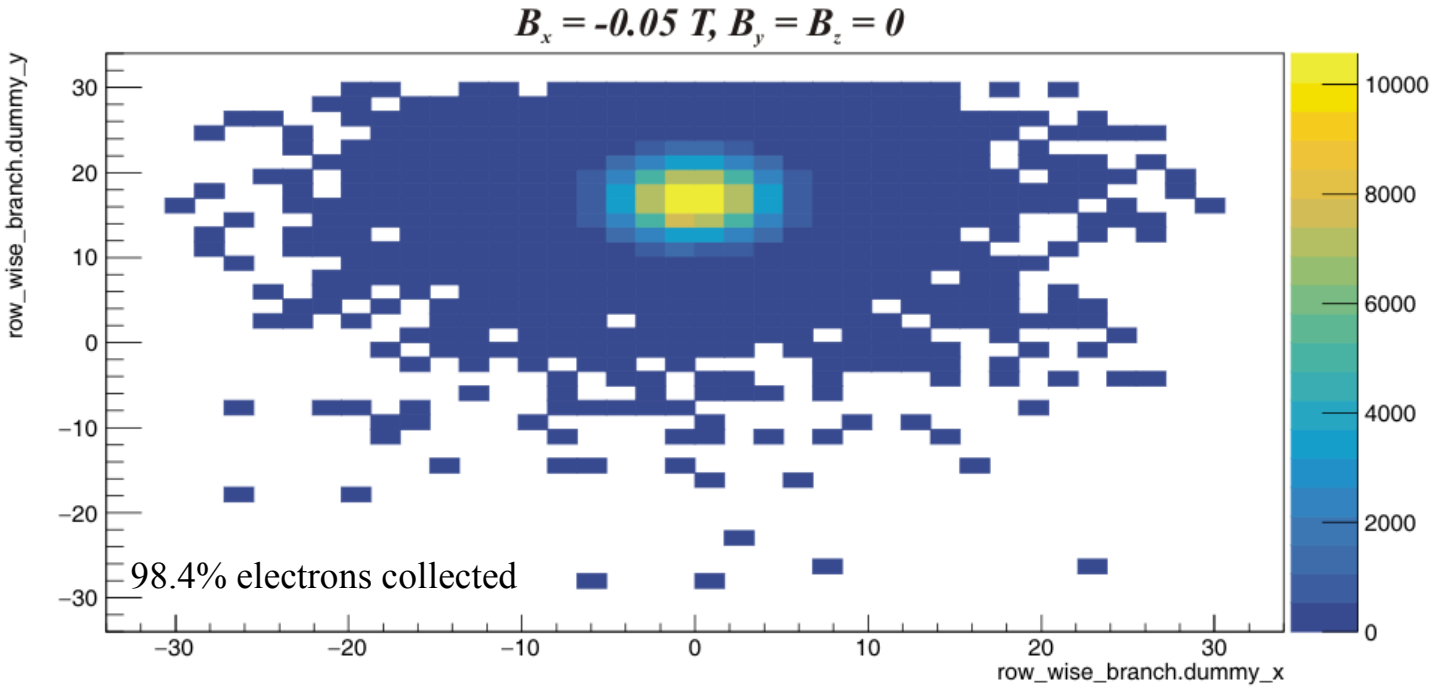
dummy

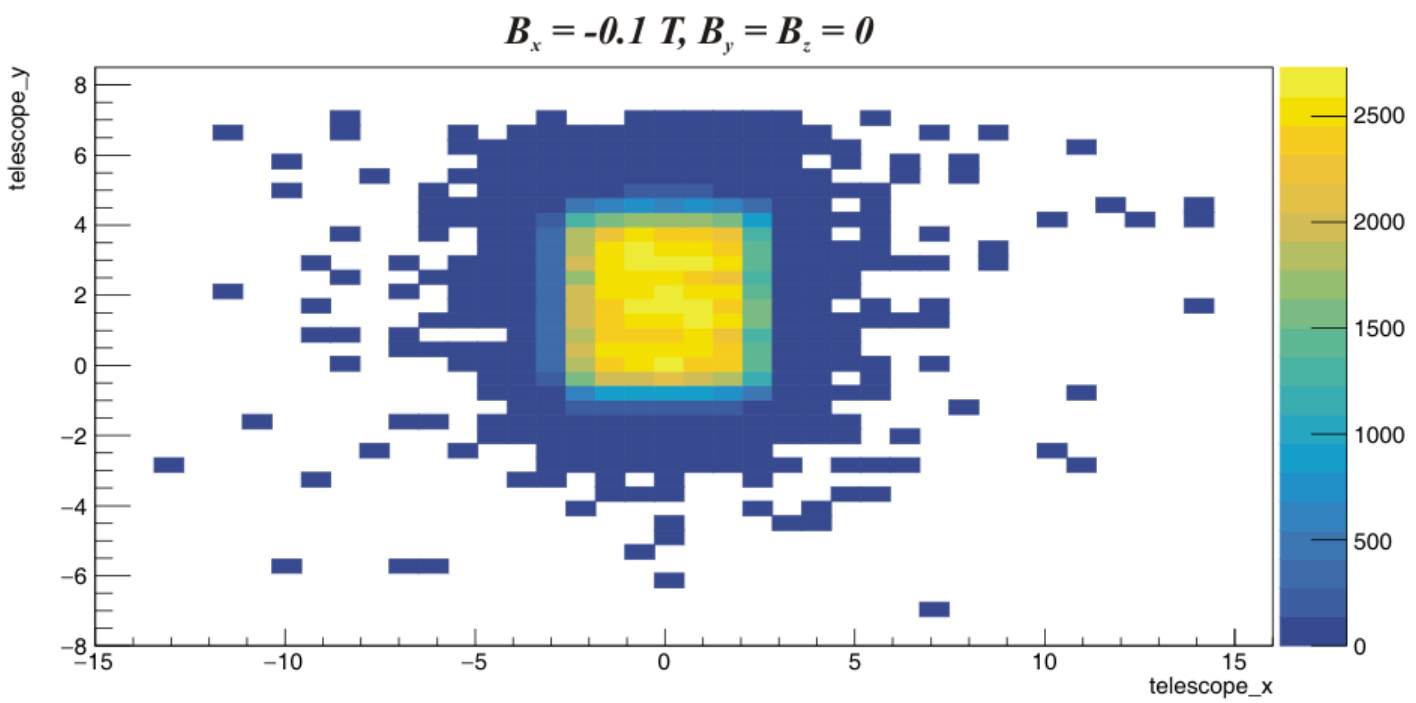




$E_e = 1\ GeV$

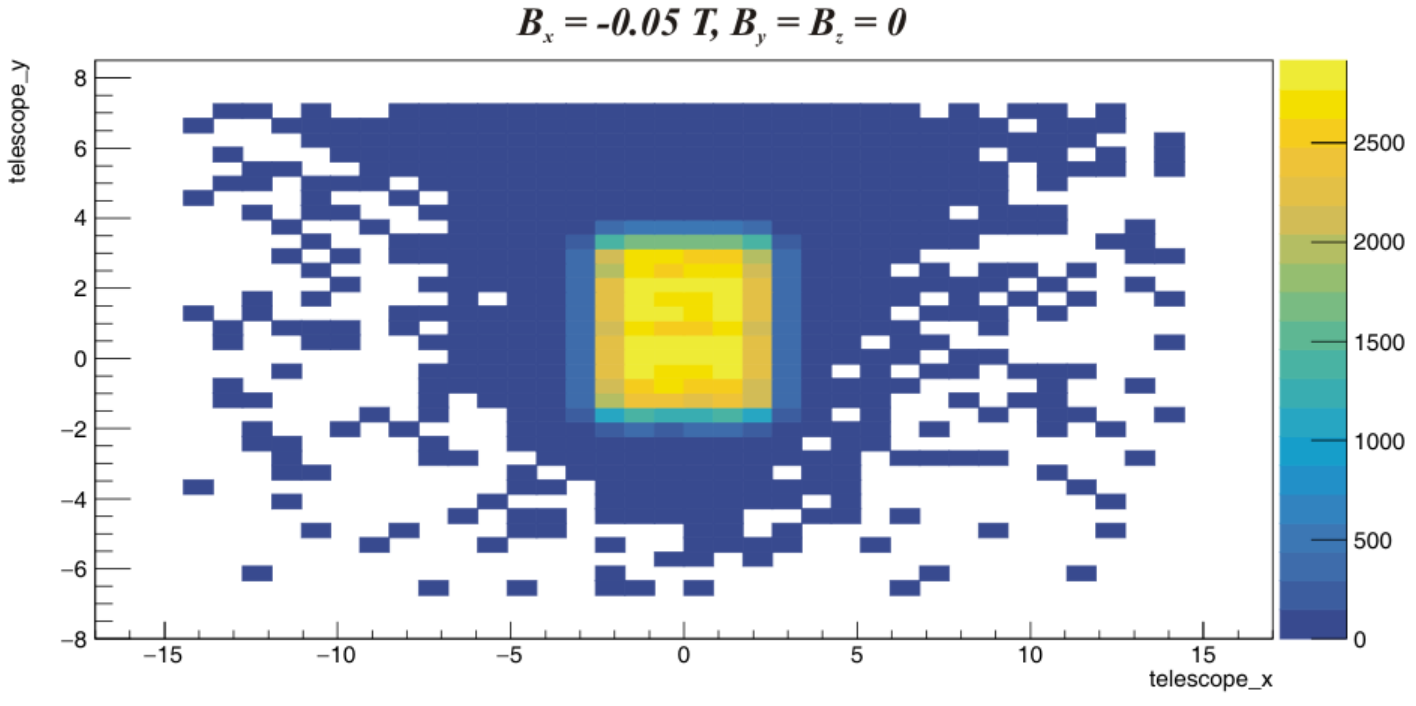
dummy

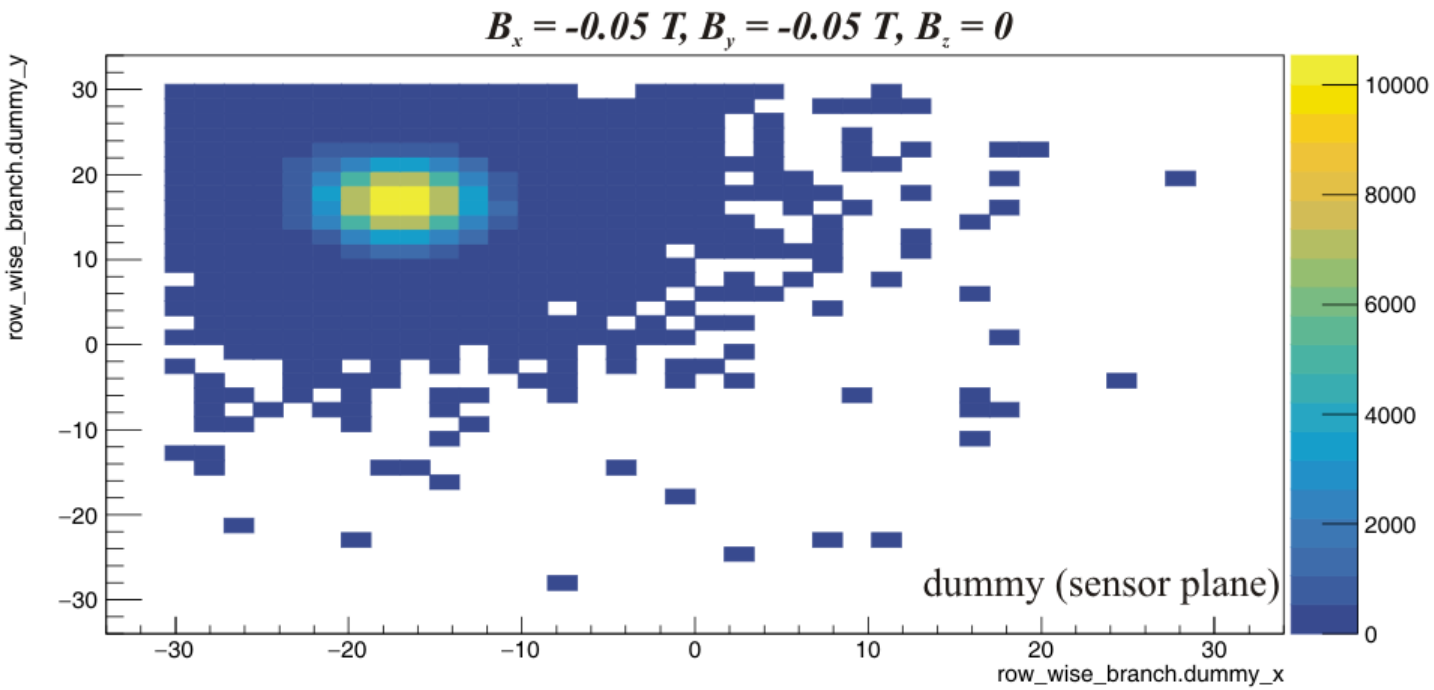




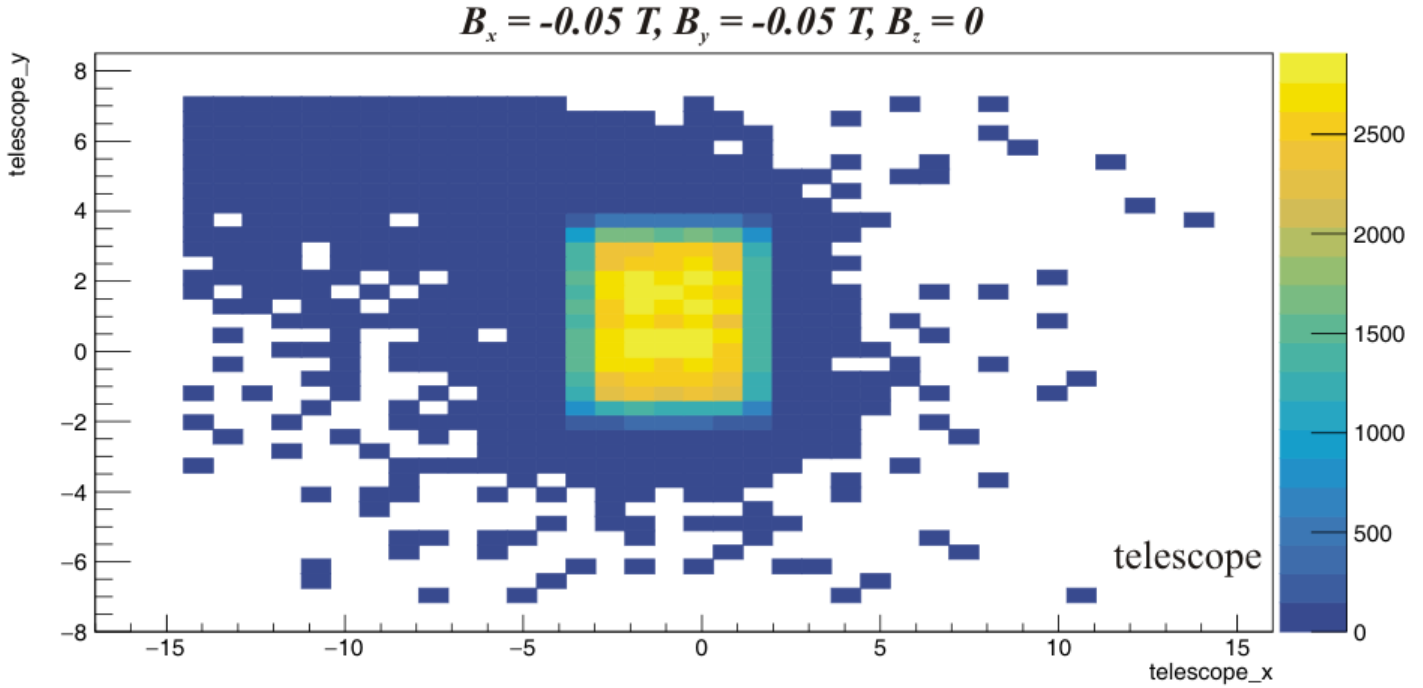
$E_e = 1\ GeV$

telescope



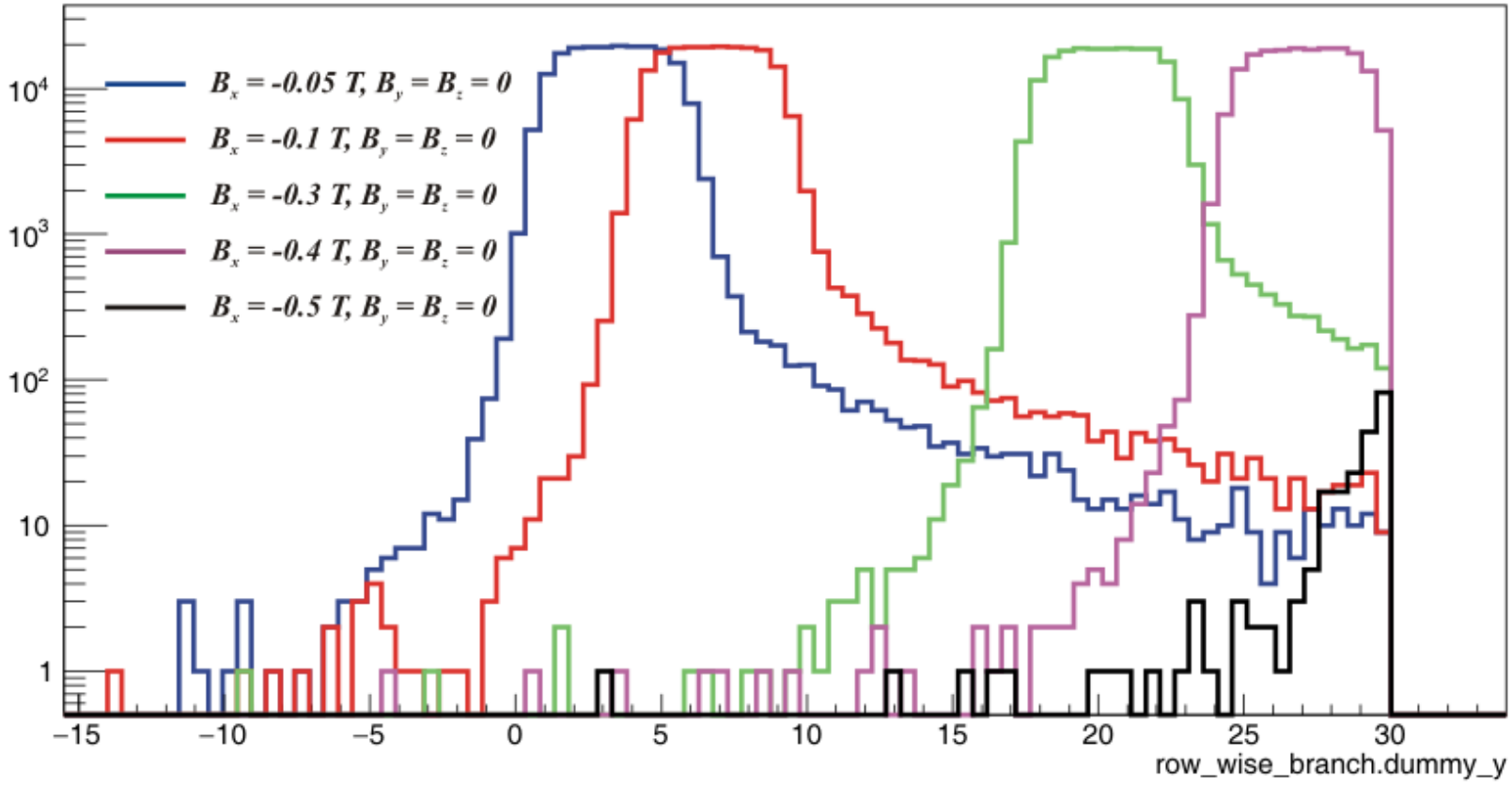

$B_x = -0.05\ T, B_y = -0.05\ T, B_z = 0$
row_wise_branch.dummy_y
row_wise_branch.dummy_x
dummy (sensor plane)

$E_e = 1\ GeV$


$B_x = -0.05\ T, B_y = -0.05\ T, B_z = 0$
telescope_y
telescope_x
telescope

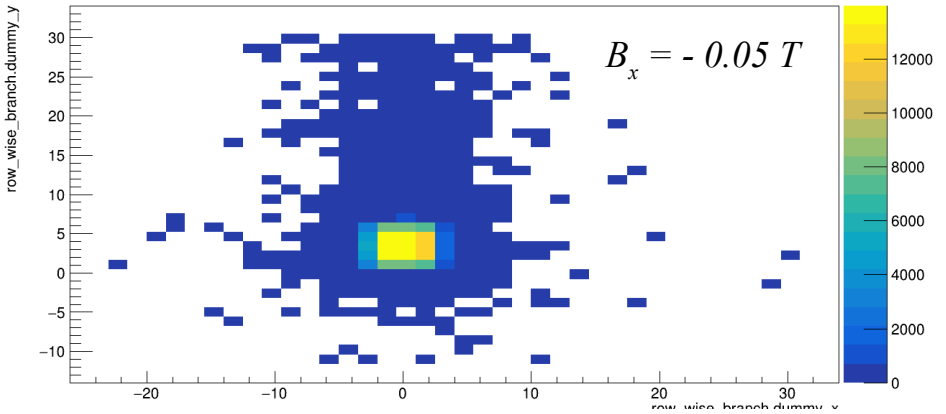
$E_e = 5\ GeV$

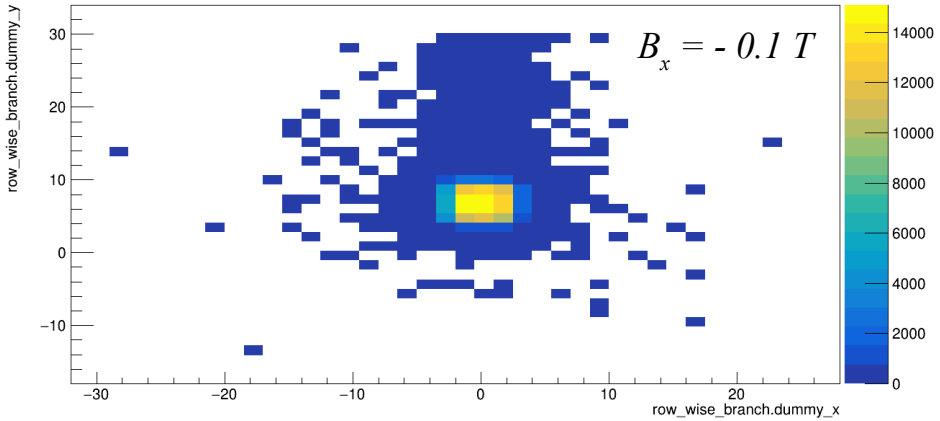
dummy

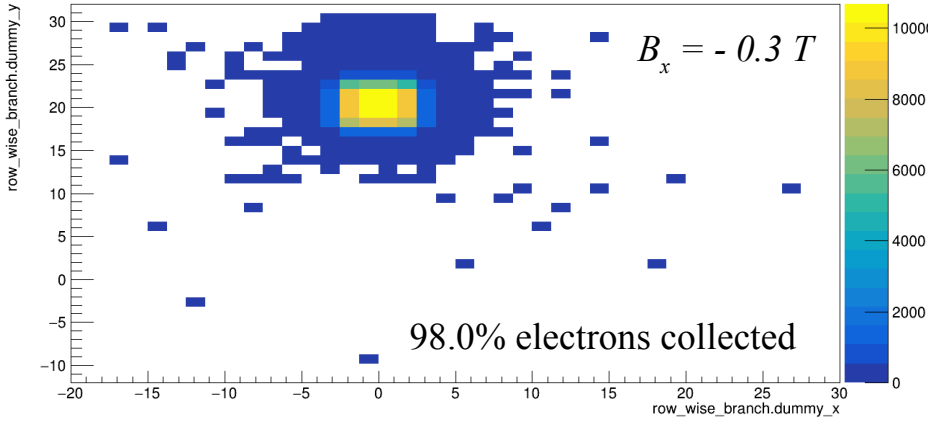


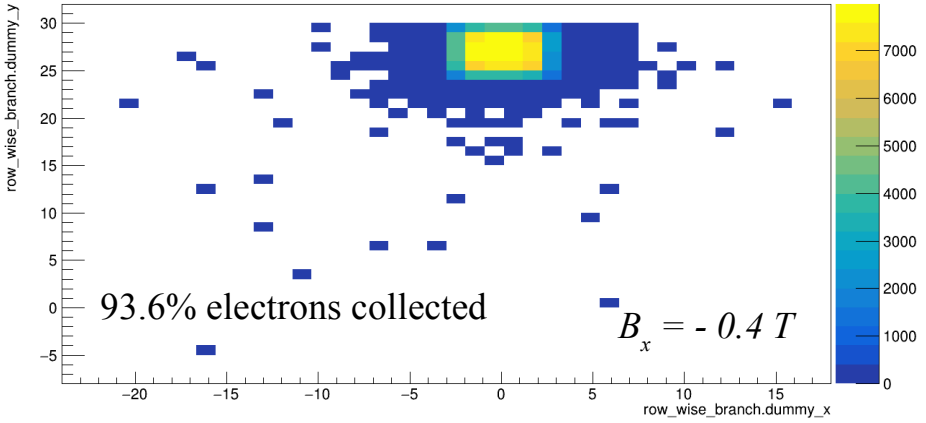
$E_e = 5\ GeV$

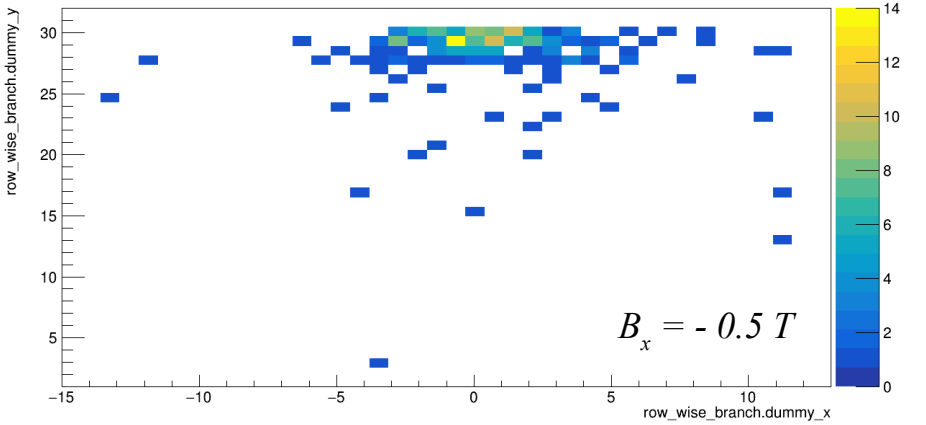
dummy











Conclusion

- For 1 GeV electron beam magnetic field of 0.1 T orthogonal to beam axis pushes the most of electrons outside the dummy, causing significant loss of statistics; there is a small loss in statistics for 0.05 T as well, but it seems that we can survive it
- For 5 GeV electron beam, there is no significant loss in statistics for magnetic field up to 0.4 T; for 0.3 T and 0.4 T electron hits in the dummy are far from the center and can be nicely separated from hits from gammas, which will be shown soon

- **To do: gammas!**

- **Bohdan, спасибі!**