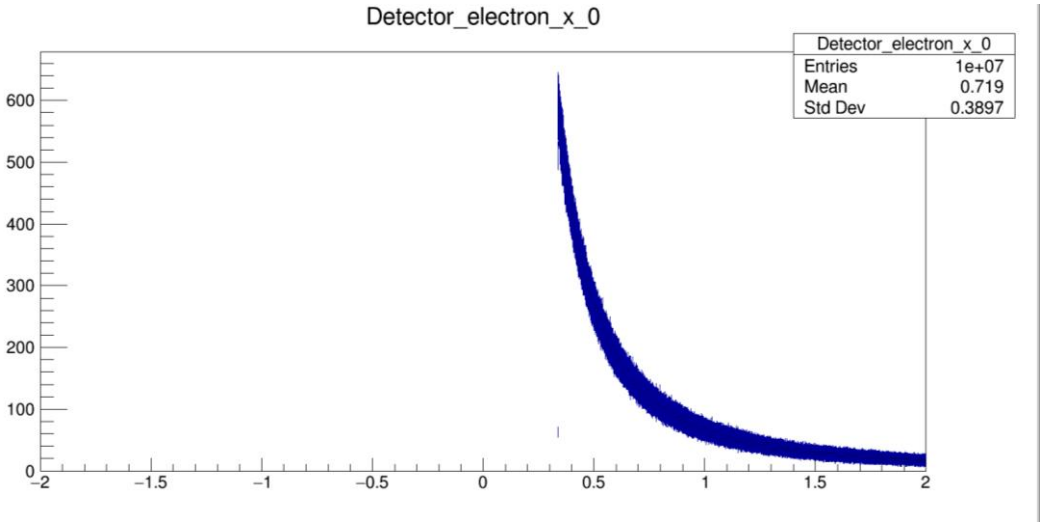
LUXE weekly meeting

Marius Hoffmann

Working with the polarimeter code

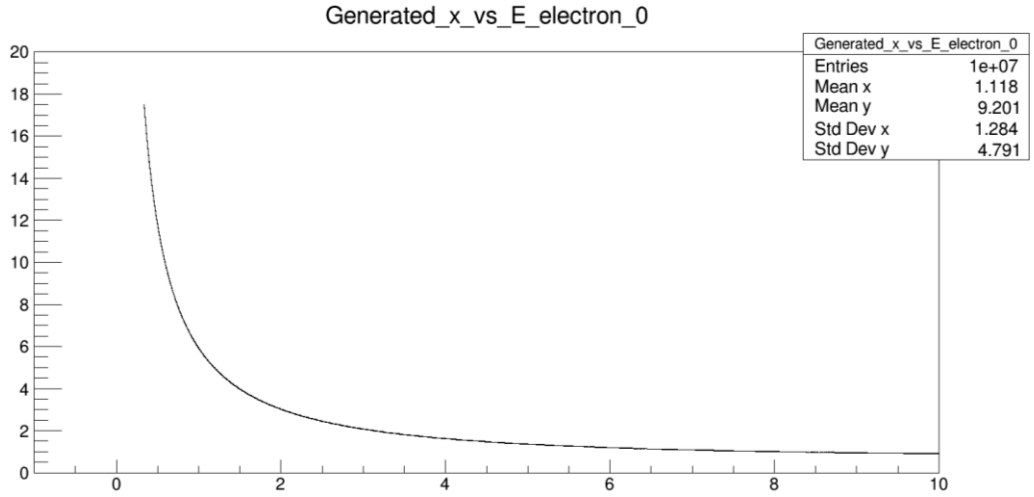
- Built scripts to run large amount of magnet and „detector“ setups
- Produced range of scenarios to estimate Energy range of detector and and get minimal necessary field strength of the magnet.
- Read out with dummy detector aka histogram at the moment
- Very modular code, will allow for adding additional code easily

Electrons at different

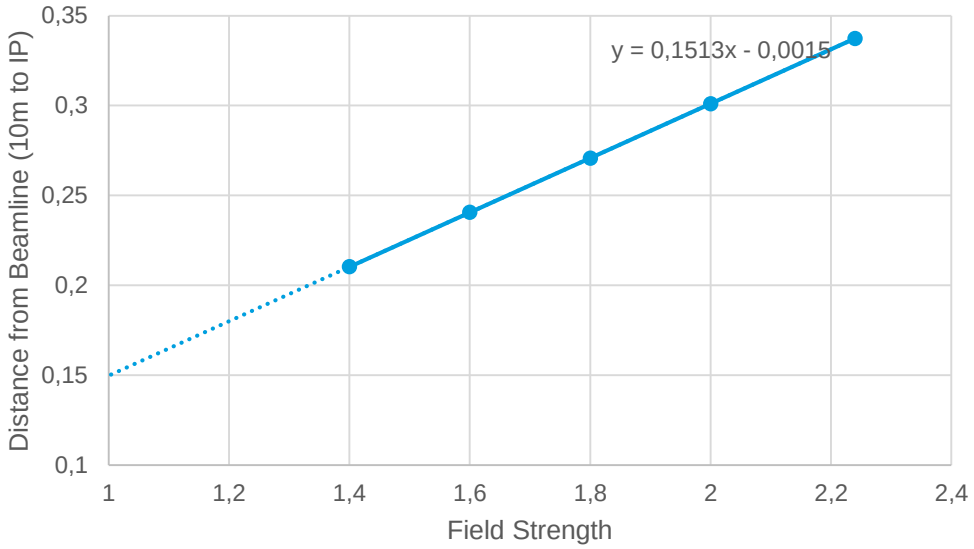


<- electrons in the detector
Use Continous spectrum

Electron energy vs position ->

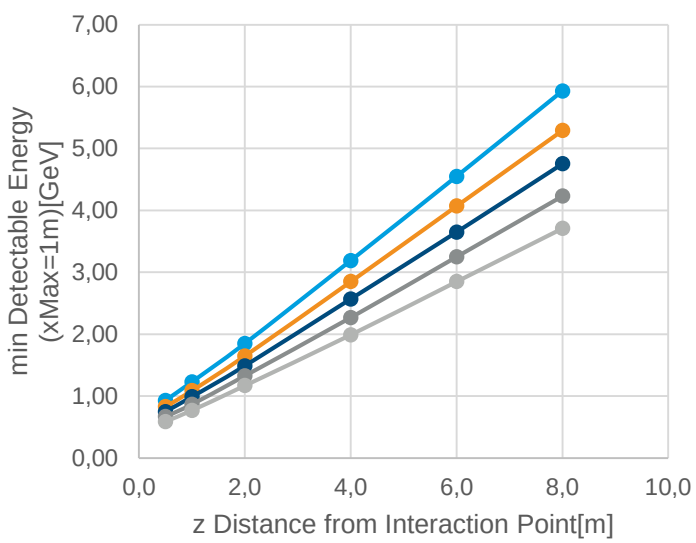


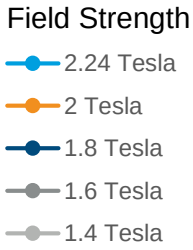
Magnetic Field Strength Limits

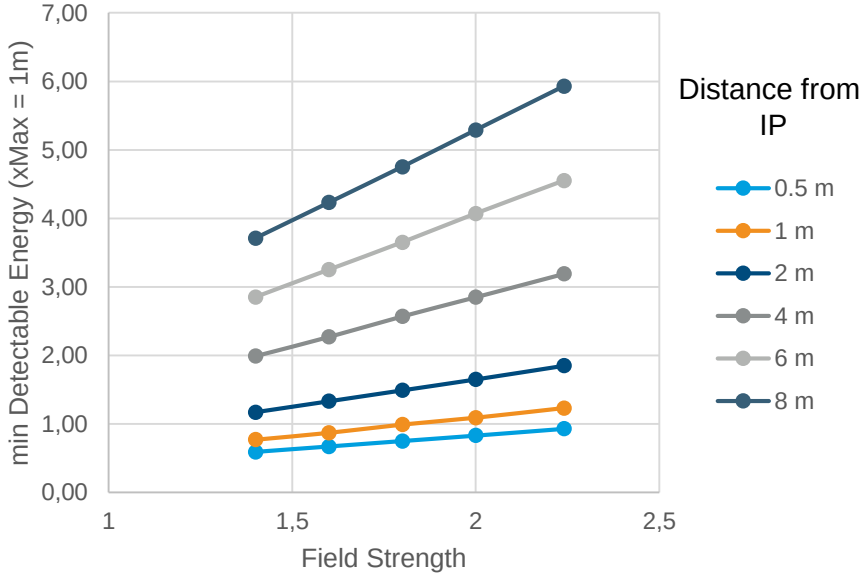


- Constraint from Machine: 10m Behind IP: Distance 20cm from Beamline
- Scan using Polarimeter and Compton event
- Minimal Magnetic field strength is ~1.34 T

Energy Range Estimation

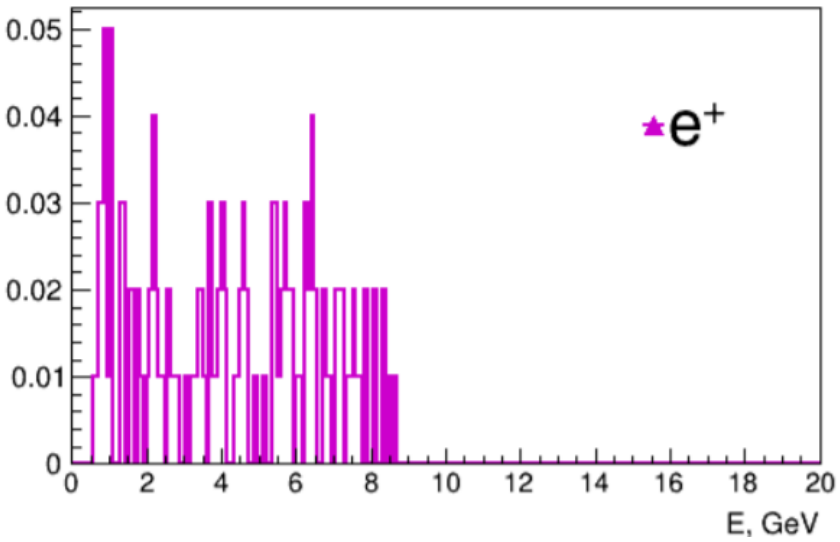


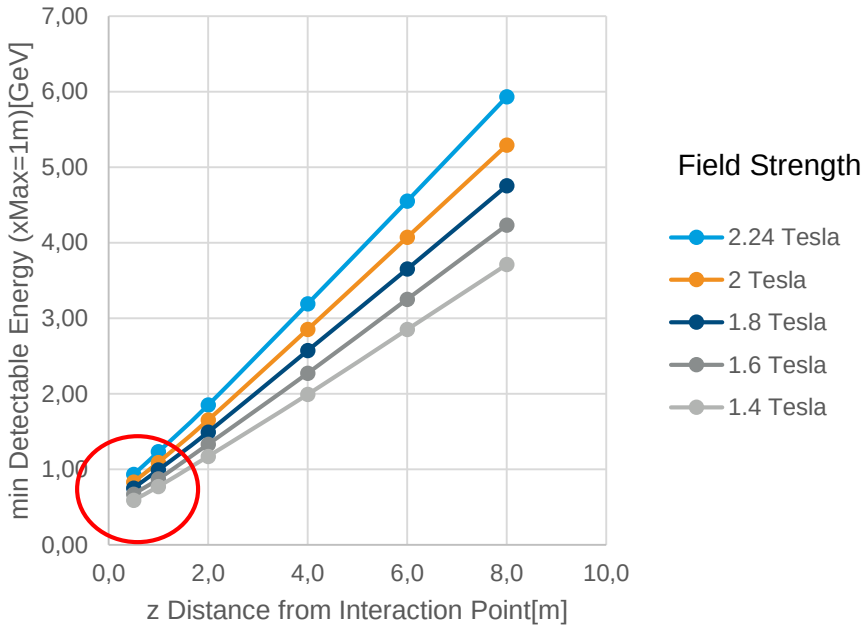




- X_max = 1m , z_min =0.5m, zmax = 8m with 1m magnet and 1m drift
- Compton events use to scan energy range in polarimeter software
- Sub GeV Electrons/Positrons detectable at 0.5m Distance.
- For 1.4 T E_min is 0.59 GeV/ For 2.24 T E_Min is 0.93 GeV
- Additional run for lower fields of <1.4 T

Positron Spectrum





Low energy positrons will be a close call with the given limitations.
Will run some further simulations with finer field variations.
realistiv Magnet models needed at some point.

To Do

- Alternative magnet setups. (Andy suggested permanent magnets?)
  - Polarimeter Easy sand box play with
- Varying the strength of the magnet to minimize the size of the detector?
- Implementation of some kind of Detector module to estimate impact of detector parameters (granularity, efficiency…)
- Get complete energy range for different magnet scenarios? Data from dummy enough, better simulation needed?
- Integration of Anthonys events.