Status report

Geant4 simulation segmented calorimeter: Variation of position of diode and beam

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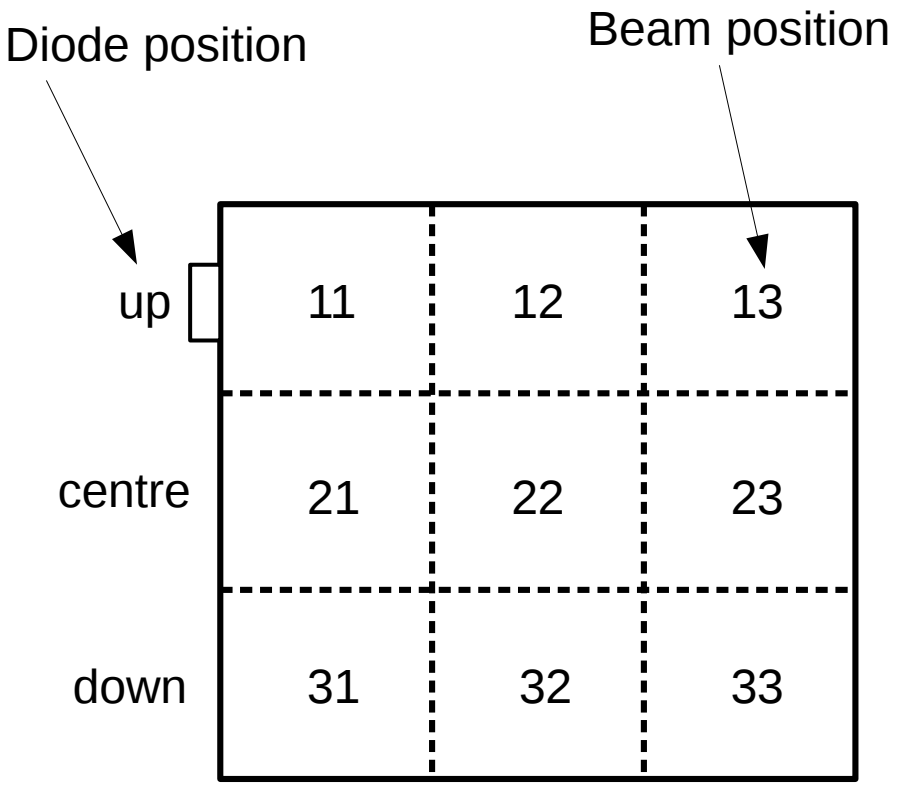
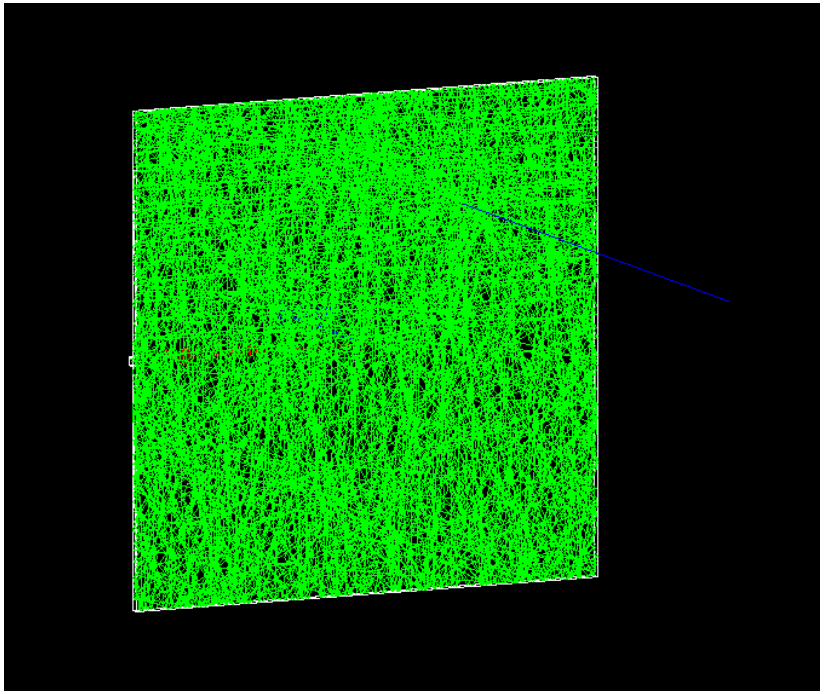
Nomenclature

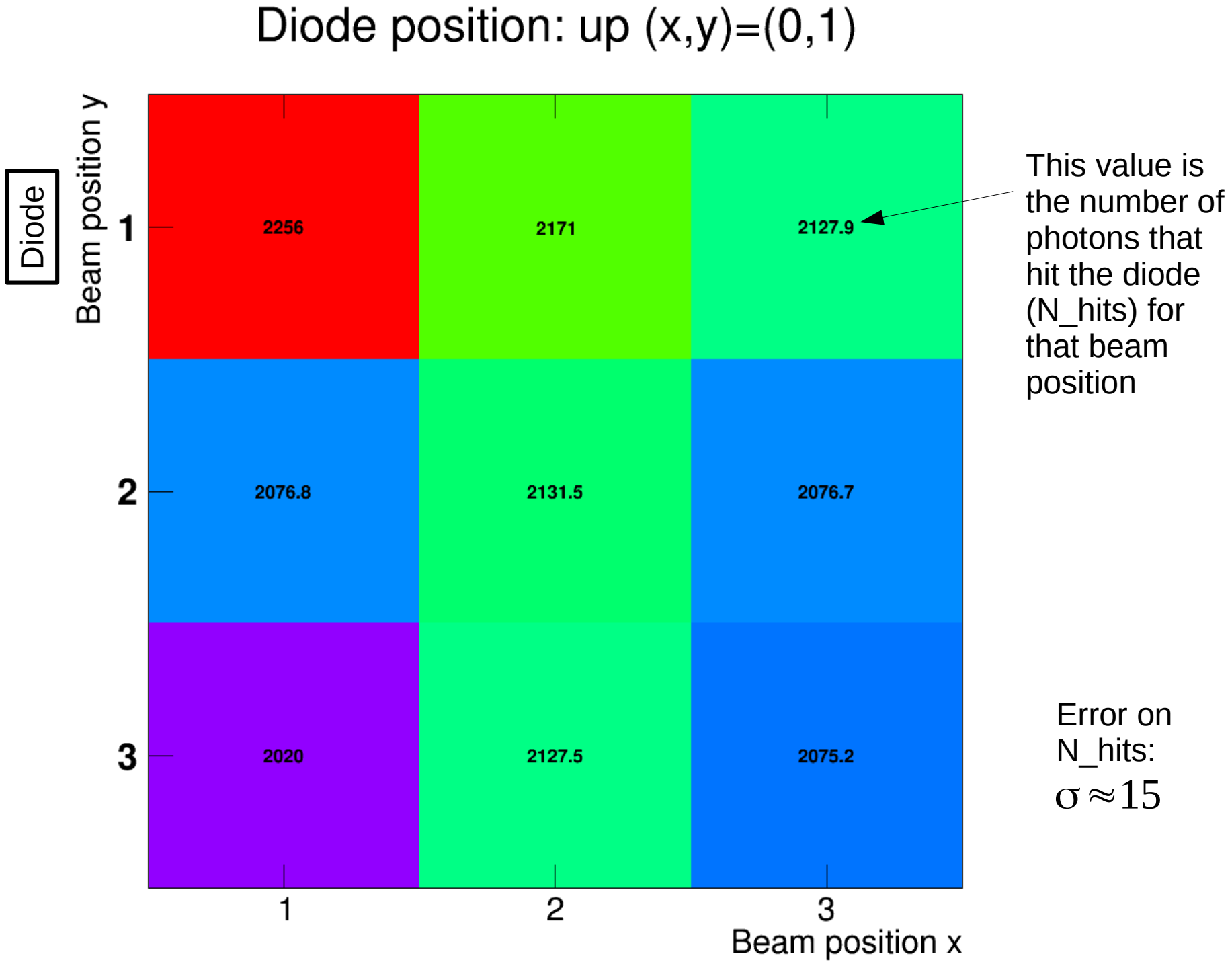


Beam direction
(into the area)

Simulation parameters:
- Beam energy = 20 MeV
- One single scintillator plate (2 mm)
- Ten protons per configuration



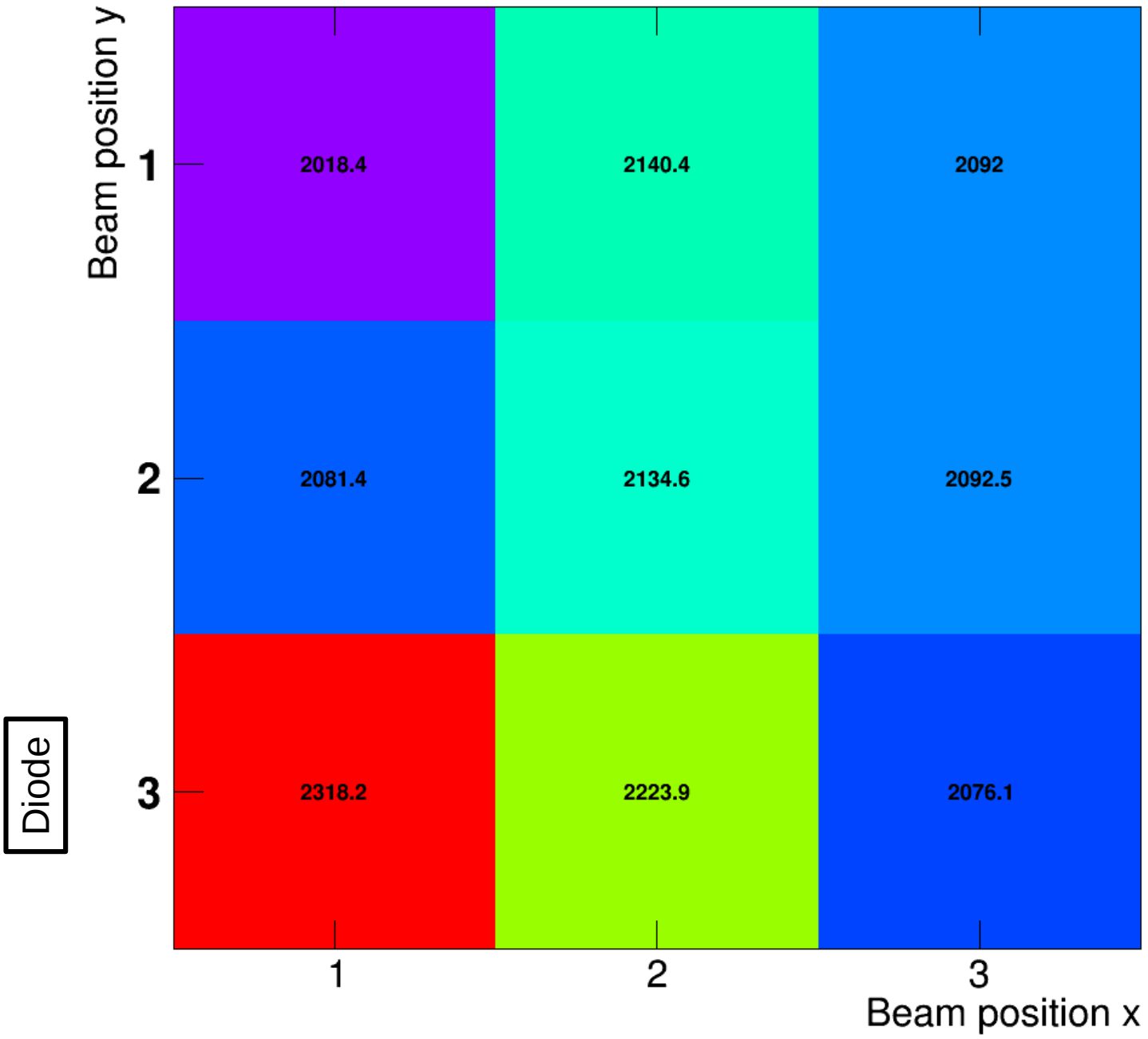
Setup configuration corresponding to:
- Diode position = centre
- Beam position = 13



This value is the number of photons that hit the diode (N_hits) for that beam position

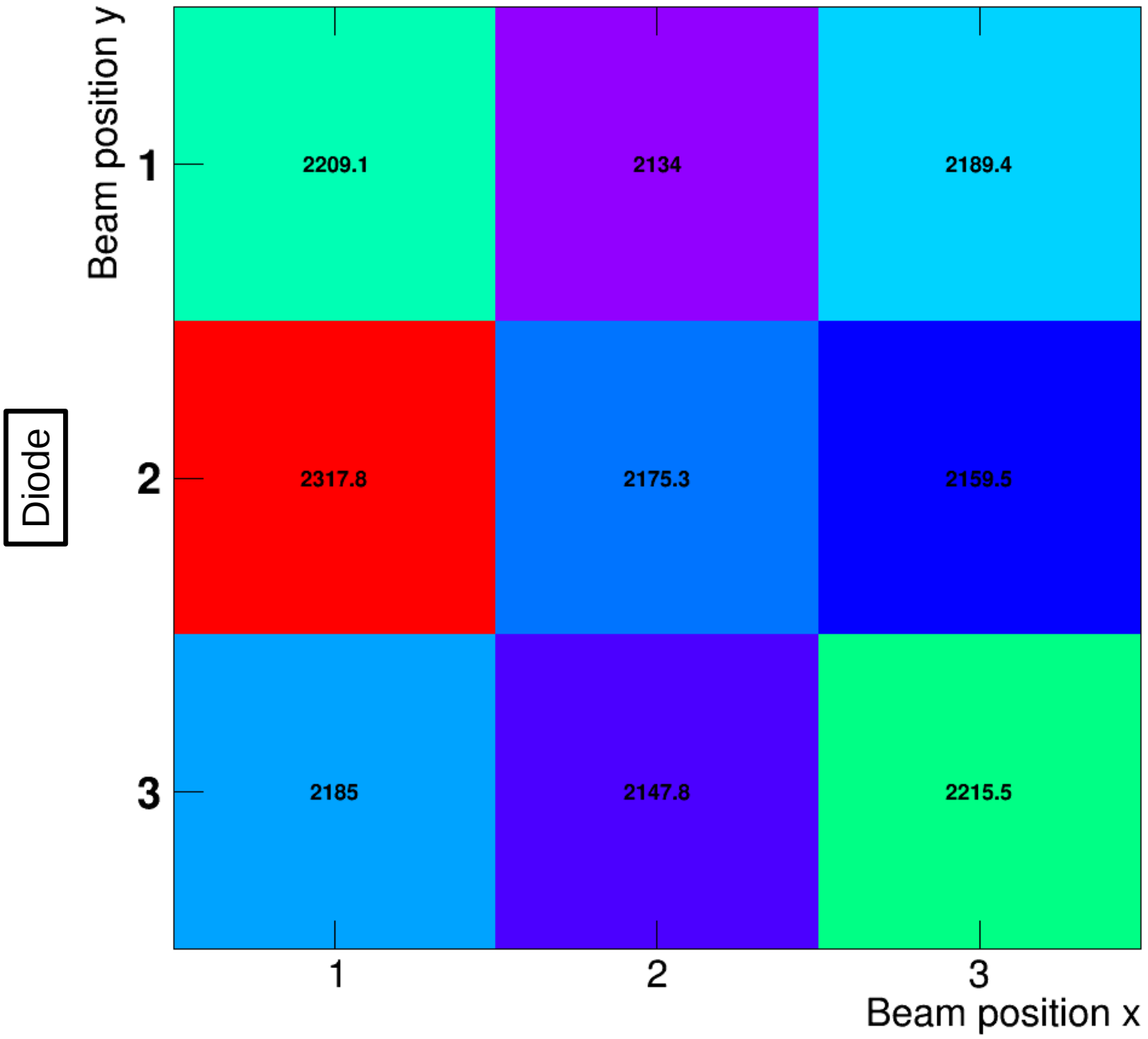
Error on N_hits:

$\sigma \approx 15$



Error on N_hits:

$\sigma \approx 15$



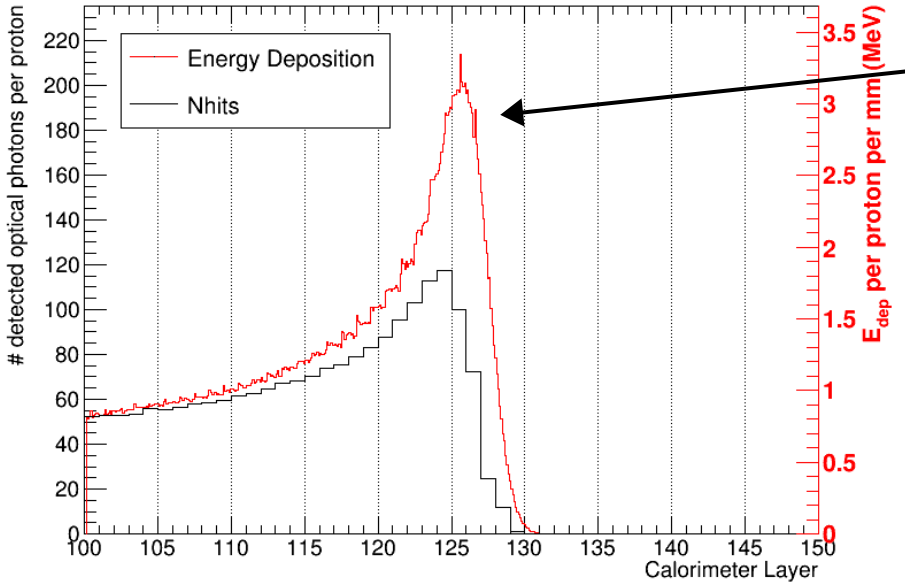
Error on N_hits:

$\sigma \approx 15$

Conclusions

- Absolute number of N_hits doesn't vary much with beam and diode position (order of 10%) because of multiple reflections
- Maximum of N_hits detected for the configuration with the beam closest and at same height as the diode (as expected)
- In general, N_hits decreases with increasing distance between diode and beam position; but in detail, it is more complicated
- Diode-up- and down-configuration: Minimum of N_hits is where the projected area of the diode is minimised
- Diode-centre-configuration: Minimum of N_hits is in the centre of upper and lower row as well as on the opposite side of the diode

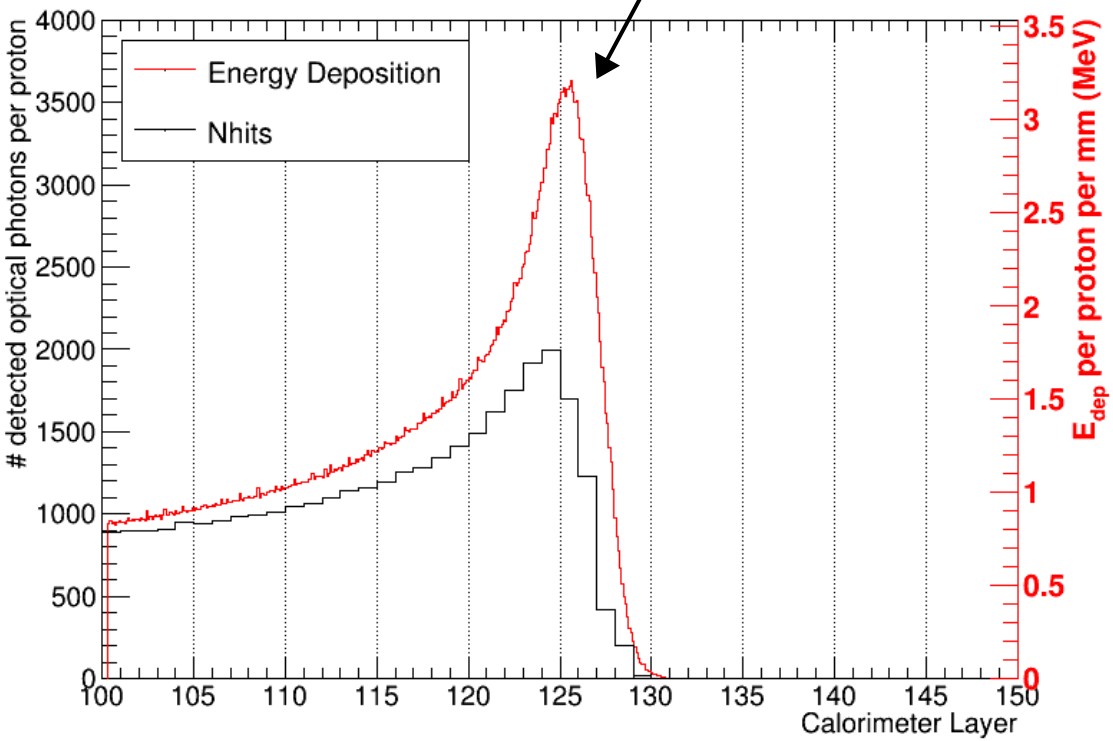
Energy deposition: Bug fix



Remember: Spikes and steps in energy deposition

Reduce step size

Spikes and steps mostly gone



To do and upcoming

- Still visualisation bug (can't save images)
- Analytical approach of Bragg curve – what to use for?
- Next Monday: outreach talk at my former secondary school