

NPS background simulations current status

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Amagnet → NPS

Started from G.Niculescu's *Amagnet* G4 code.

- Needs Geant4.10.01, or a higher release.
- A flavour of G4 QGSP physics model.
- GDML coding of detector construction.
- Features magnetic field, scoring volumes.
- ROOT implemented (ntuples, histogramming).

Amagnet --> NPS:

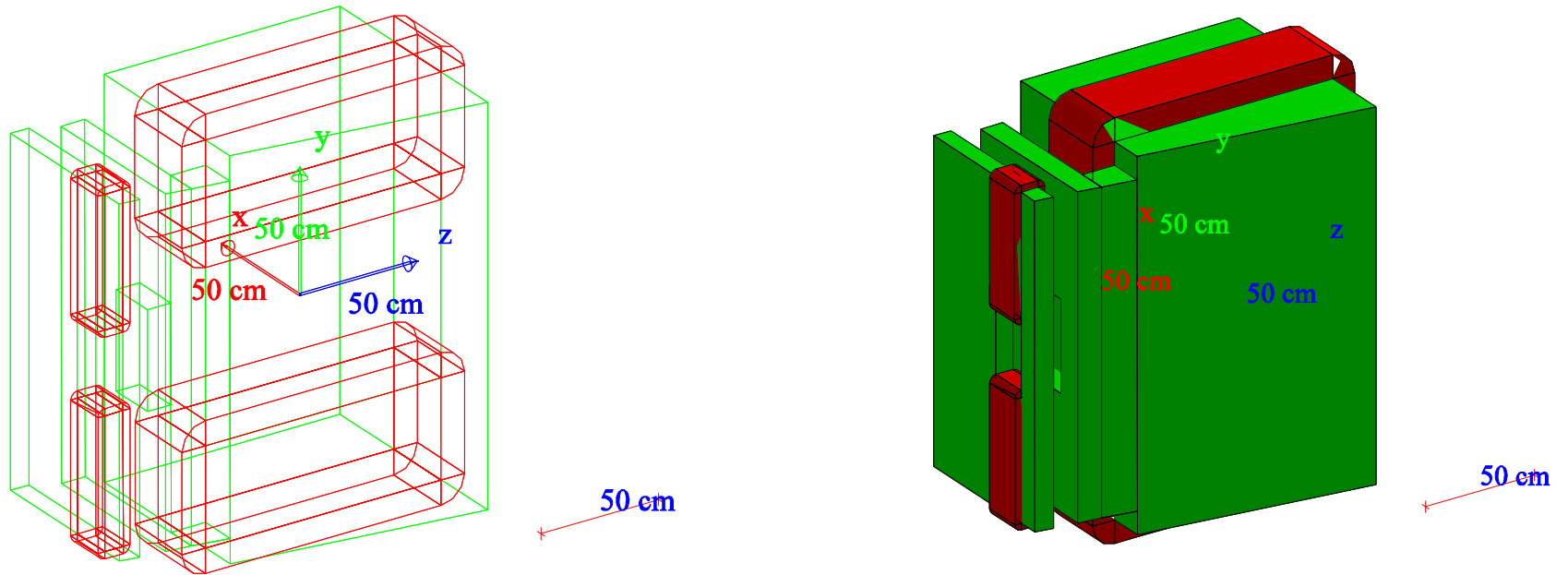
1) GDML coding of the NPS setup:

- ✓ target cell (Gabi's thesis)
- ✓ scattering chamber (B.Metzger's drawings)
- ✓ beam pipe (NPS proposal)
- ✓ sweep magnet (Bogdan's presentation of July 2015)
- ✓ Calorimeter (NPS proposal)
- ✓ Magnetic field (Bogdan)

2) Adaptation of the code to NPS:

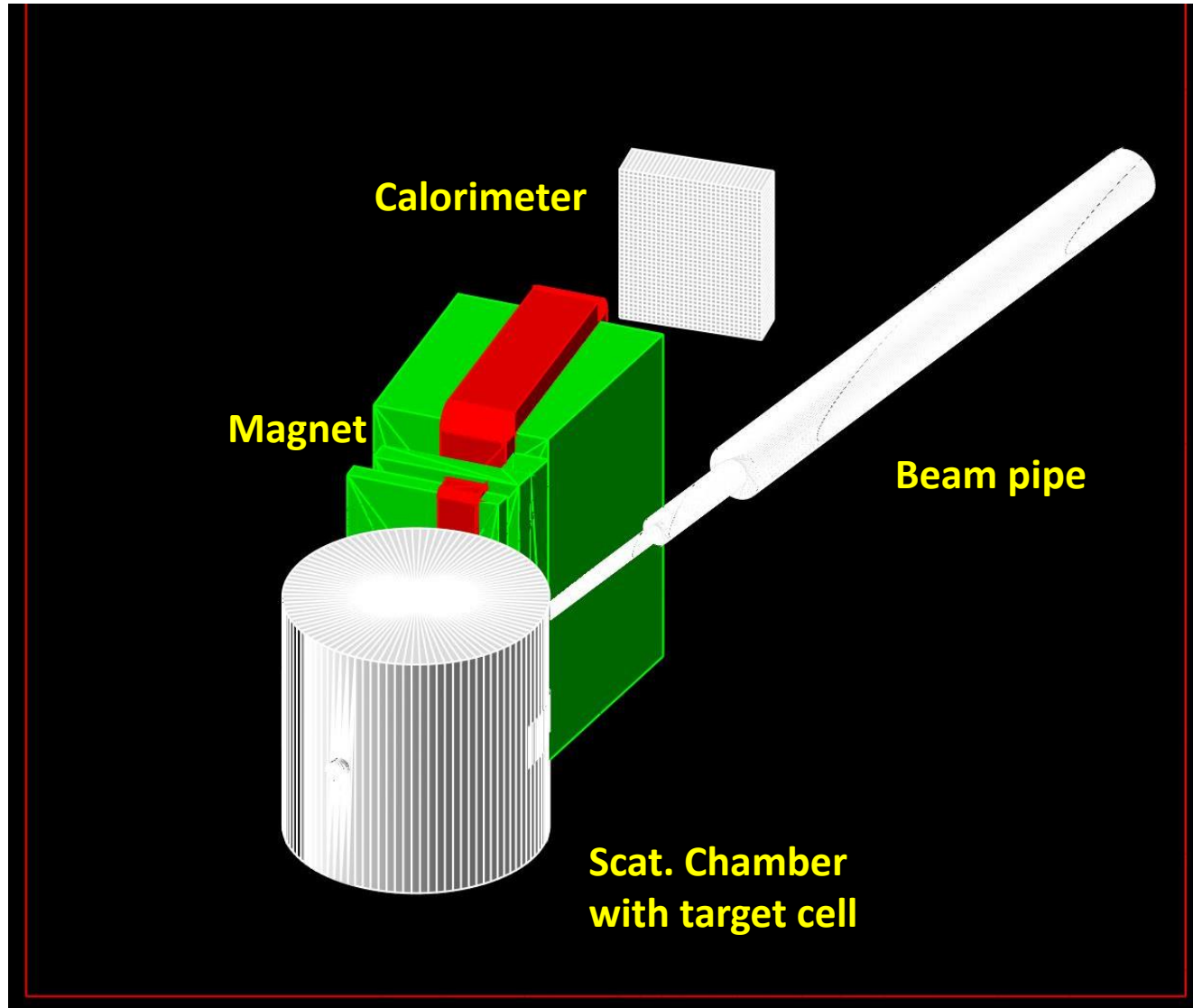
- Removing Amagnet specific code
- Including NPS specific code
- Etc...

GDML coded sweep magnet

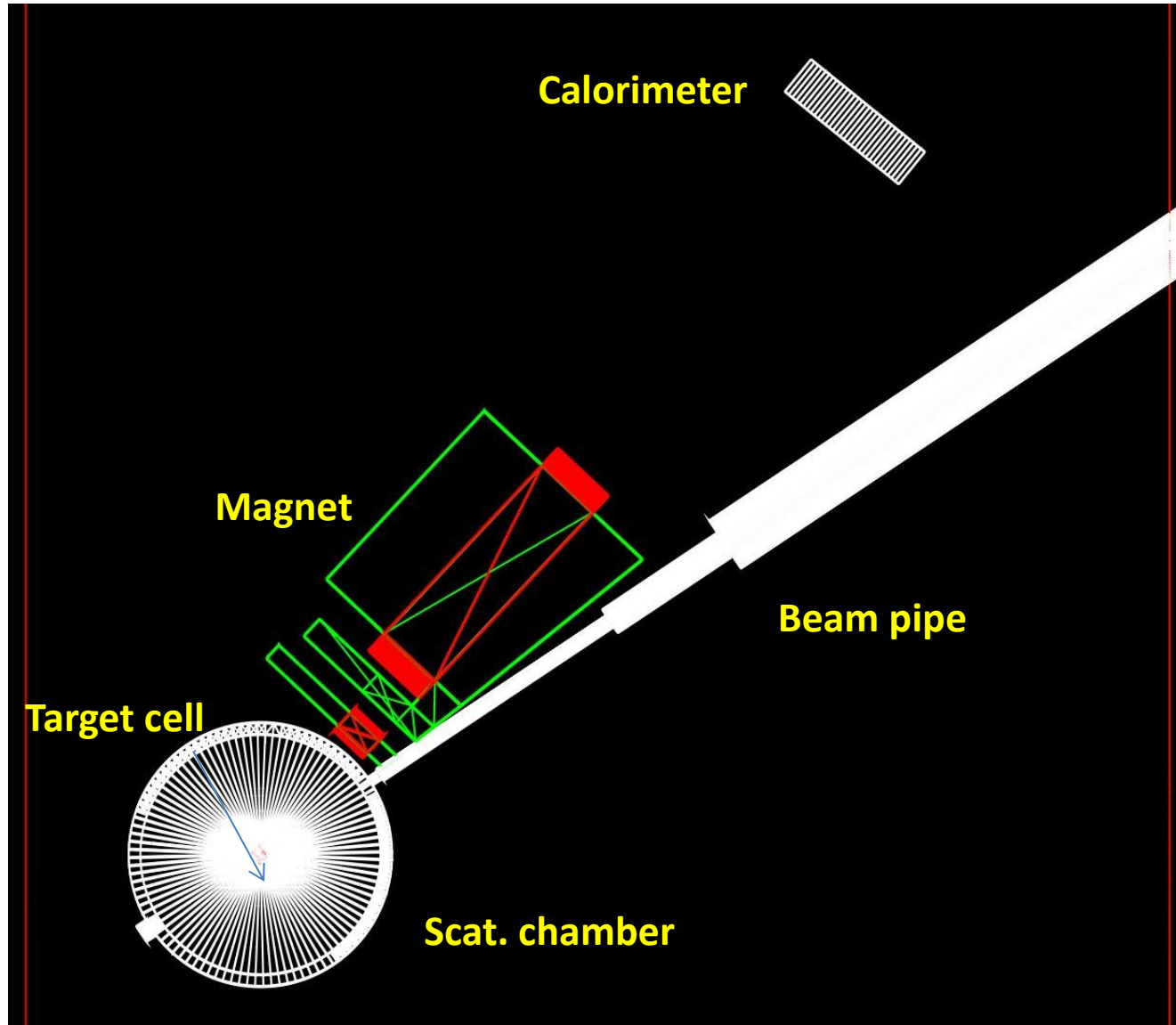


DVCS/PION configuration of sweep magnet.
Sizes taken from Bogdan's July 2015 presentation.
Yokes (green) of iron, Coils (red) of copper.

NPS setup



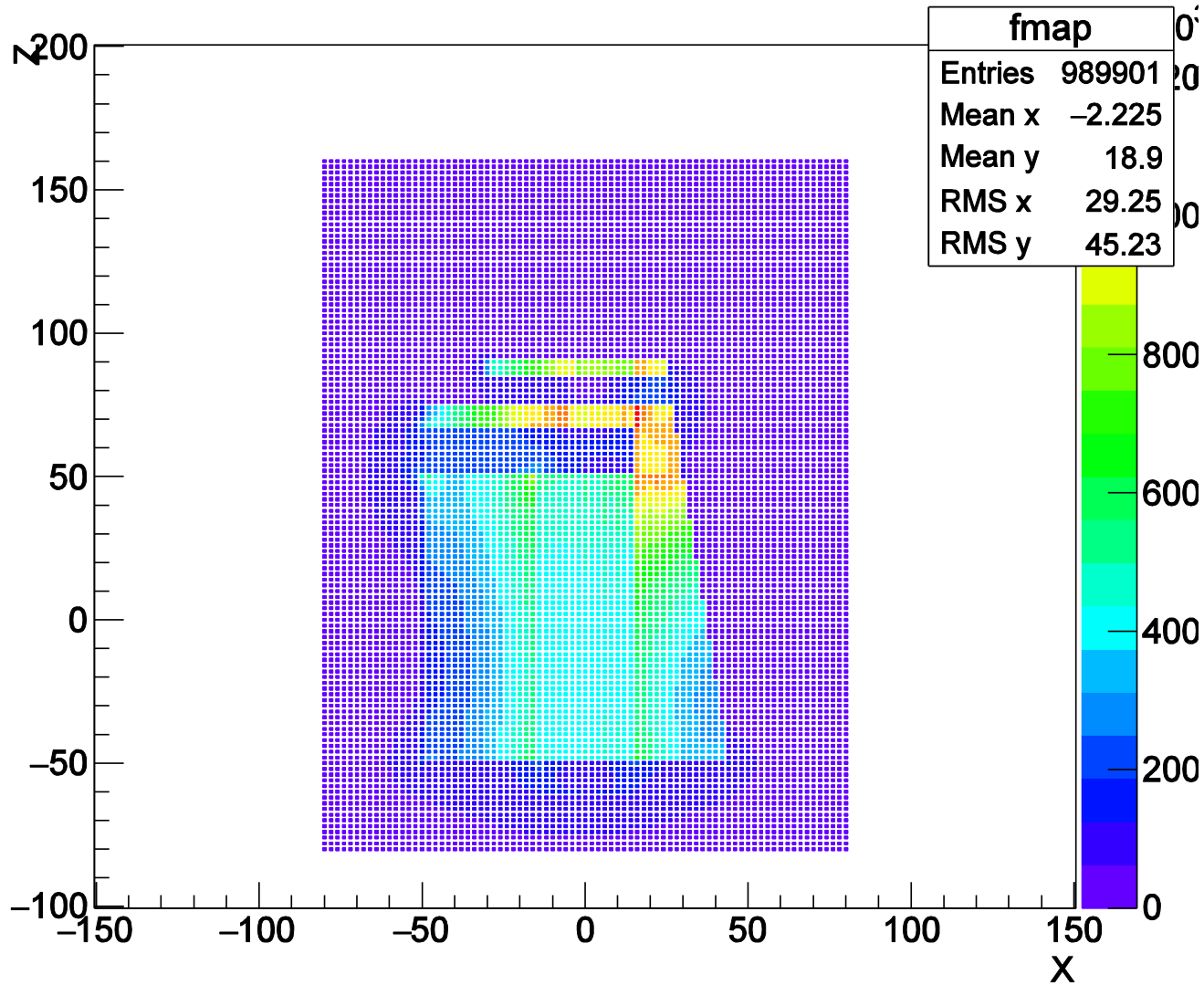
NPS setup, top view



NPS at 17.2 deg. Calorimeter at 4m, magnet at 1.57 m rotated by 4.1 deg.

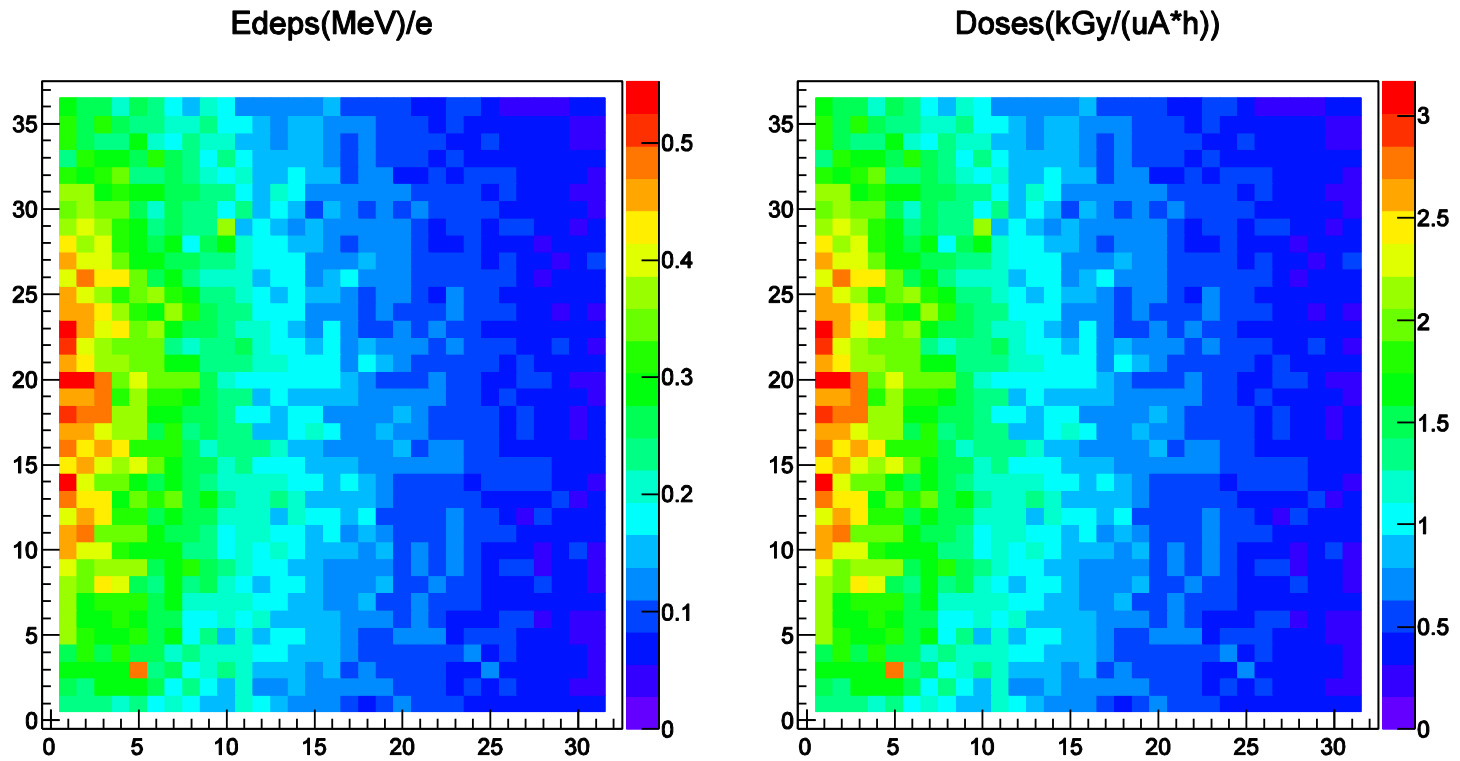
Field map

fmap



Field map from Bogdan.

Calorimeter rad. doses



Per block energy depositions (left) and radiation doses (right).
11 GeV electron beam. *No sweep magnet and field!*
Beam line at left of histograms.

To do:

Magnetic field implementation

Geometry and materials checkout:

- Target cell (wall thicknesses)
- Scattering chamber (B.Metzger?)
- Beam pipe (Rolf?, Engineers?)
- Magnet (Engennering drawings?)

Physics list choice (Gabi)

A low statistic run

Port code to Jlab ifarm

High statistic runs, as needed.