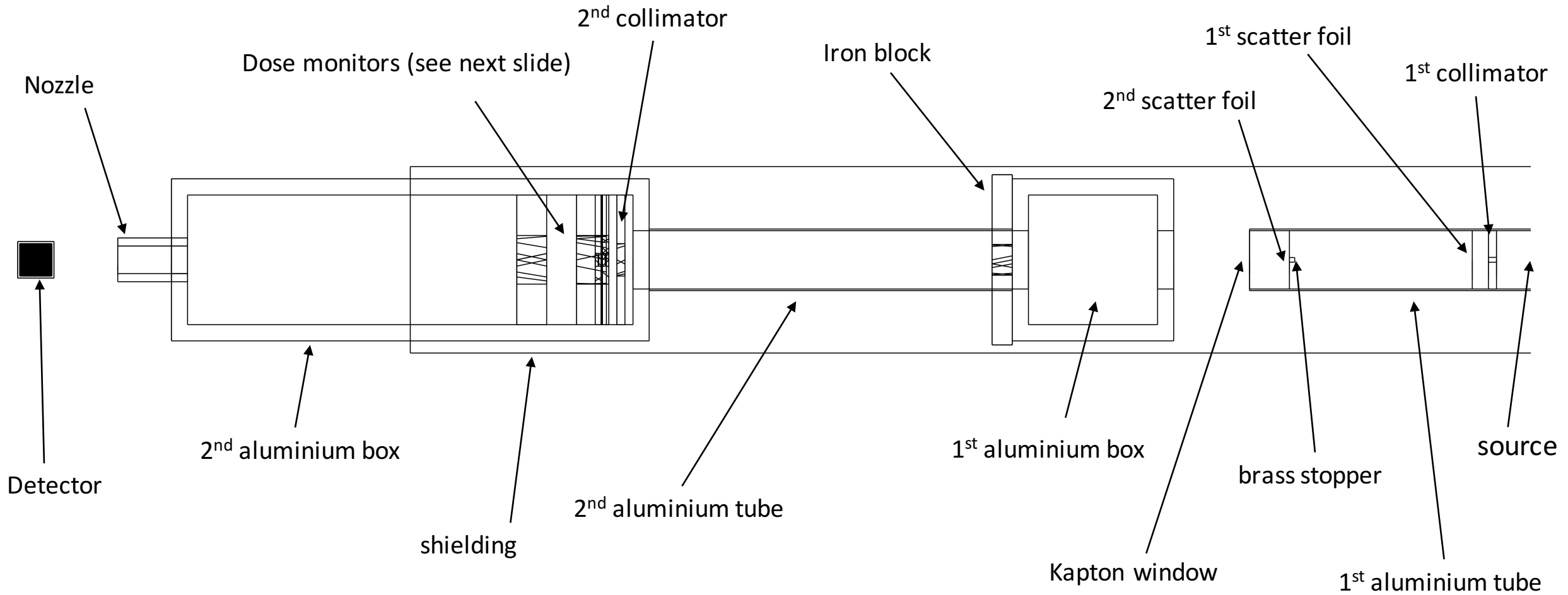
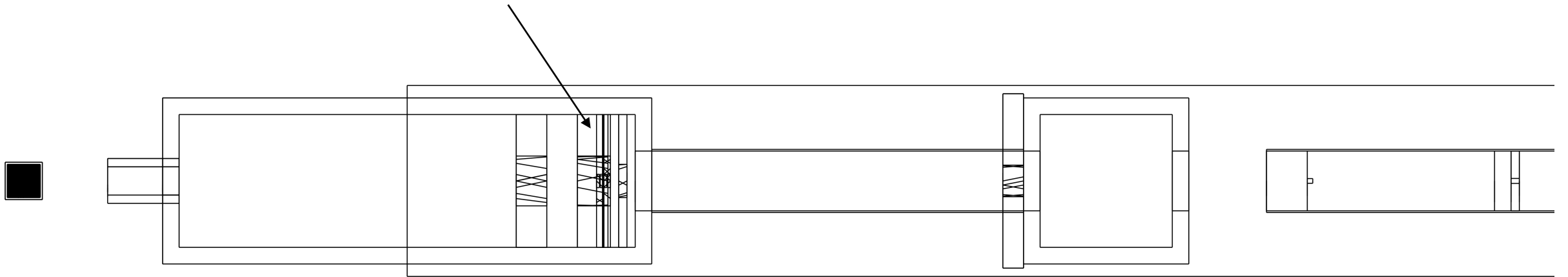


Added beamline components to DetectorConstruction.cc



Added beamline components to DetectorConstruction.cc

The dose monitors overlap completely in the second aluminium box – don't think that's right.



Plotted proton and neutron flux along the beamline to check the components were placed correctly (next slide).

Protons from G4GeneralParticleSource at (62.500 ± 0.082) MeV:

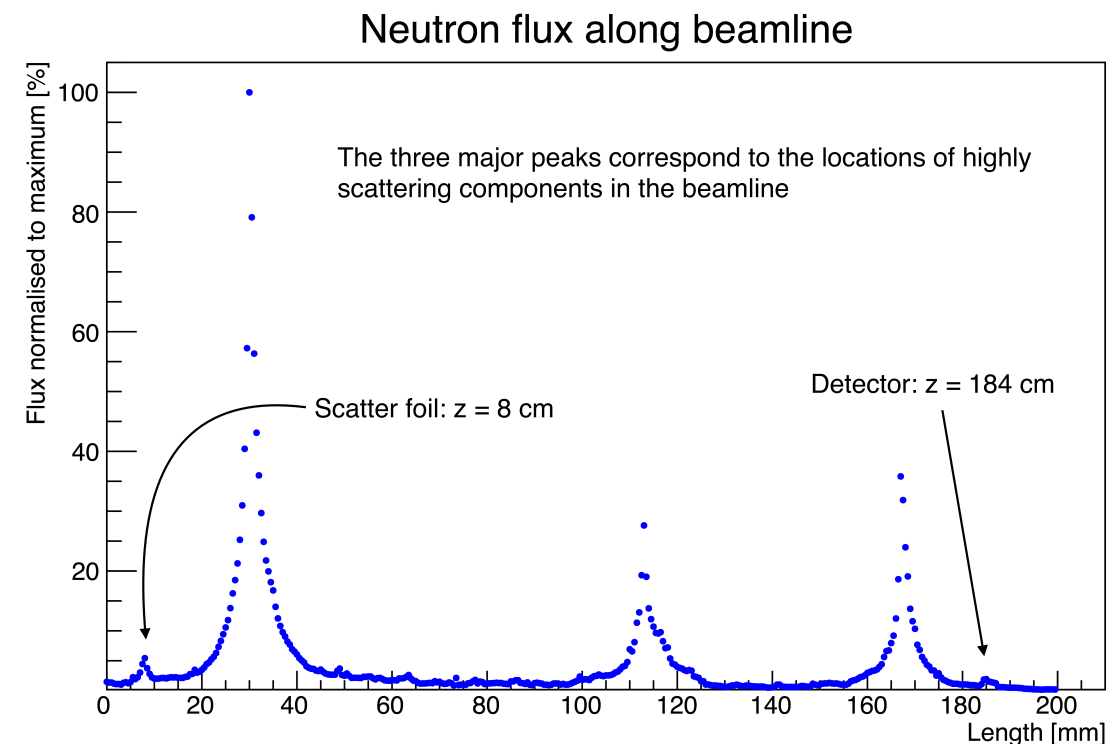
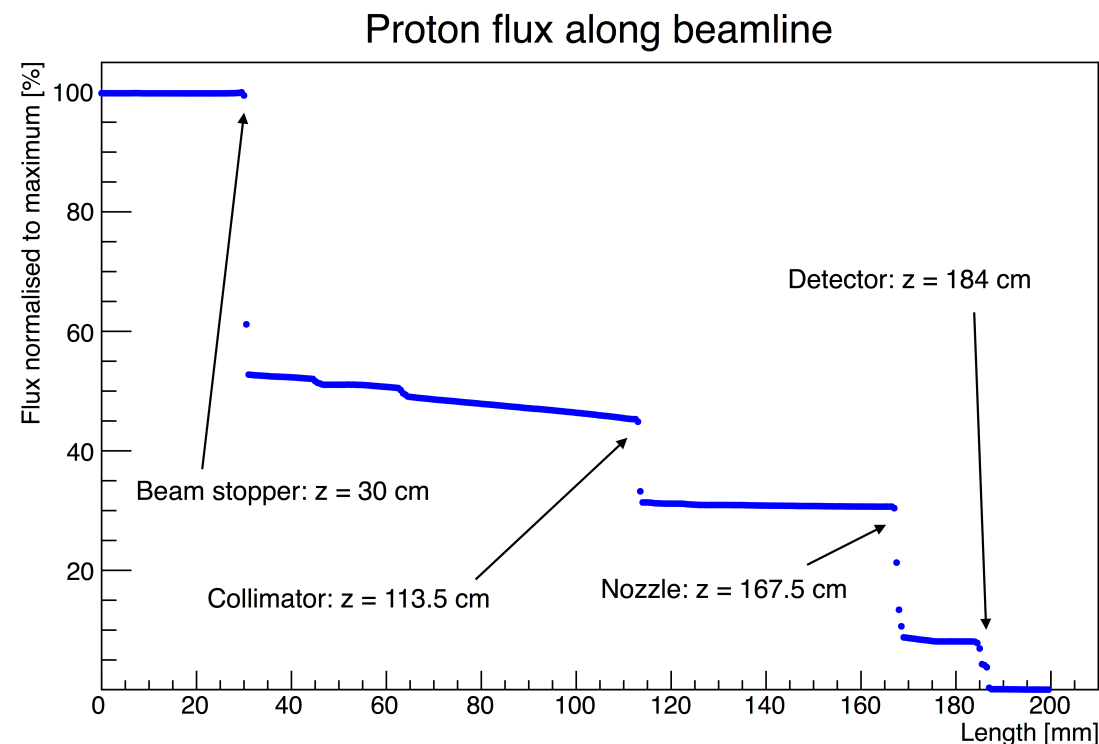
Gaussian, plane, circle, radius = 3 mm, sigma x = 0.0134 m, sigma y = 0.00362 m

50,000 events to get good resolution in neutron flux

The above settings are from the Clatterbridge simulation.

Used a longitudinal scoring mesh extending at length 200 cm from source with 400 bins.

Proton flux dramatically reduces when the beam hits highly scattering components in the beamline, as one would expect. The scattering events between protons and matter at these locations create neutrons as indicated by the sharp increase in neutron flux.



Distance from source

Lateral beam resolution at source ($z = 0$)

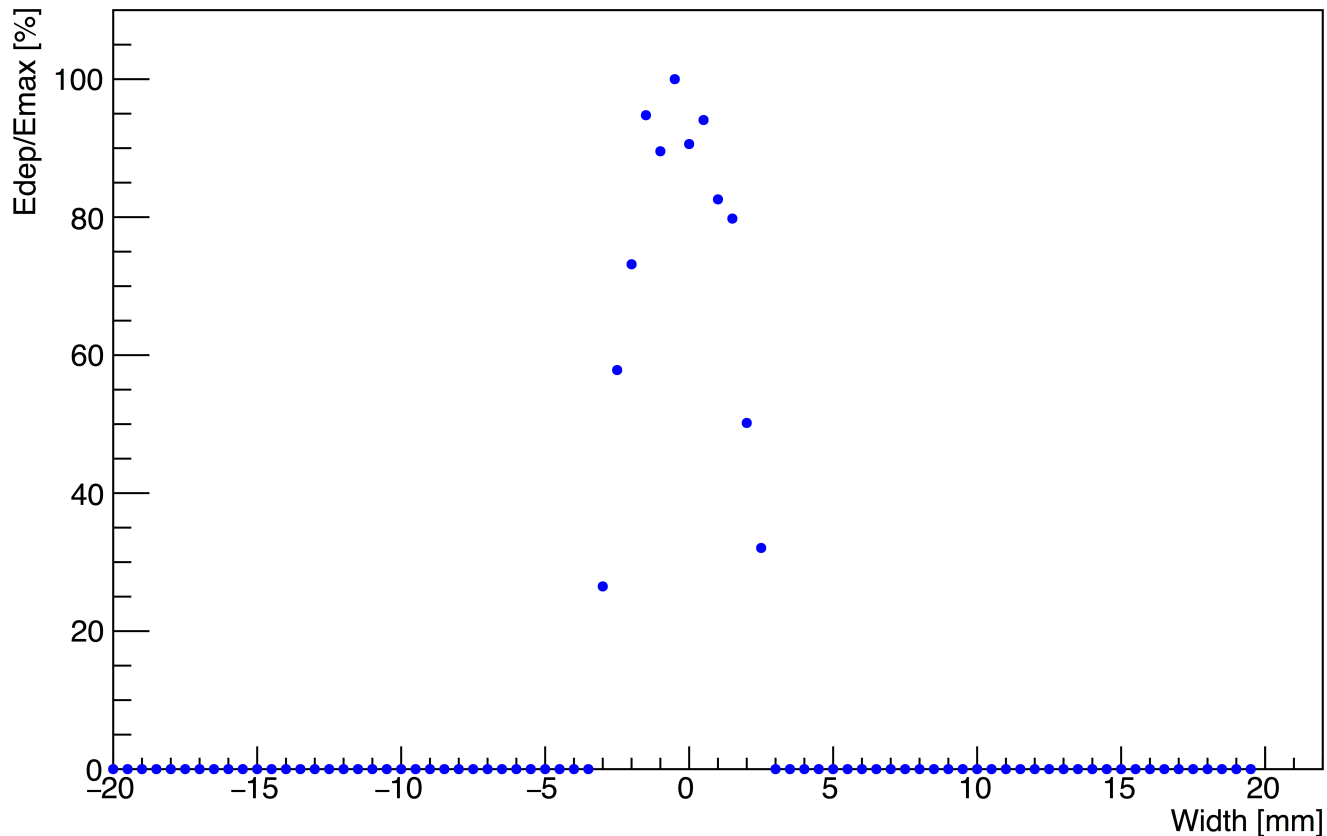
Protons from G4GeneralParticleSource at 62.5 MeV:

Gaussian, plane, circle, radius = 3 mm, sigma x = 0, sigma y = 0

2,500 events --> Set all sigma to 0 to check if the resolution is as expected.

Used a lateral scoring mesh at $z = 0$ cm centred around $x = 0$ with width 40 mm, depth 1 mm and 80 bins.

Lateral energy deposition



- From -3 to 3 mm as expected
- Did not expect curve-like shape