Update on LUXE GEANT4 Simulation

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LUXE S&A Meeting
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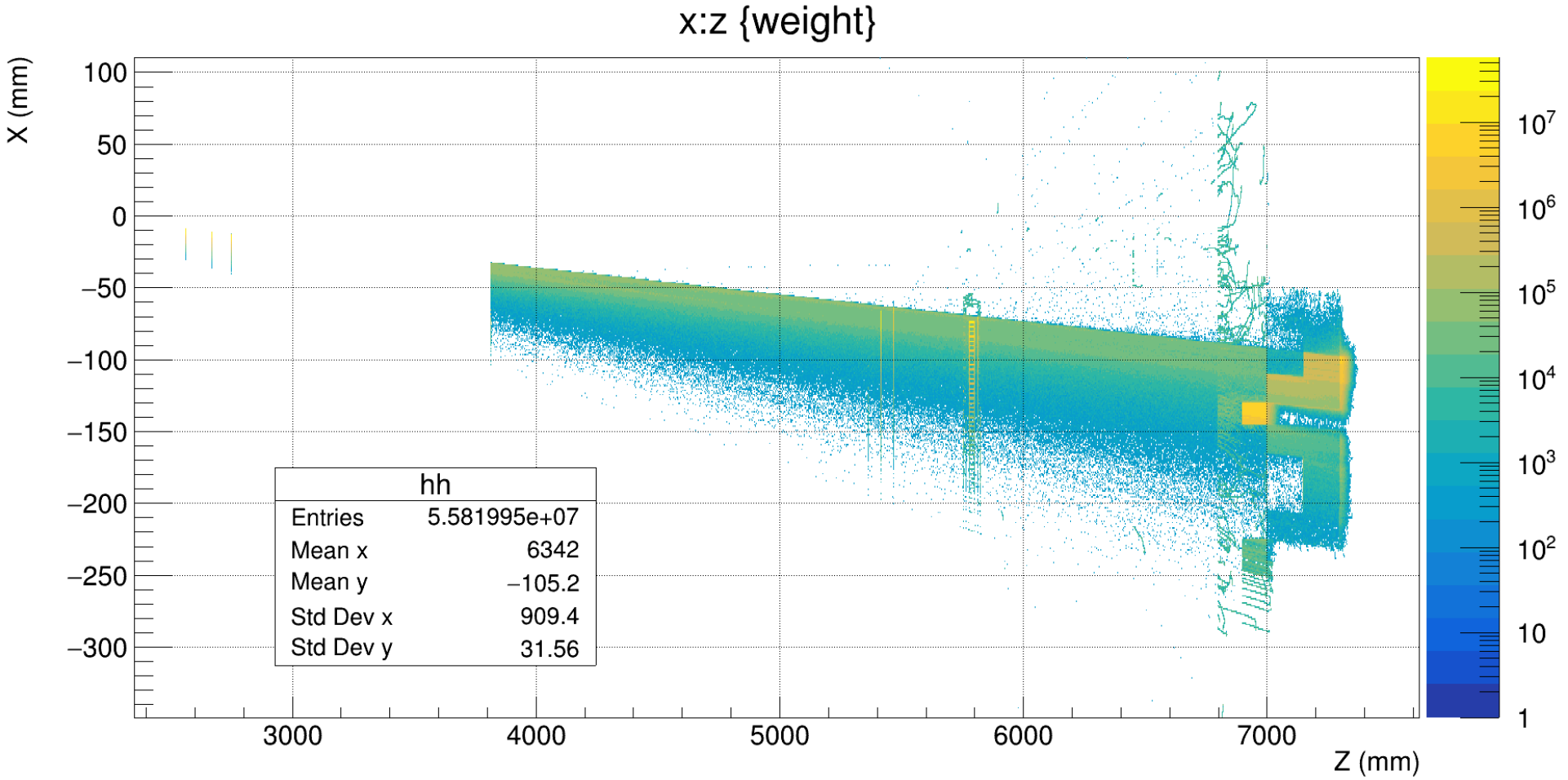
Primary electrons

Step points of first 200k electrons from

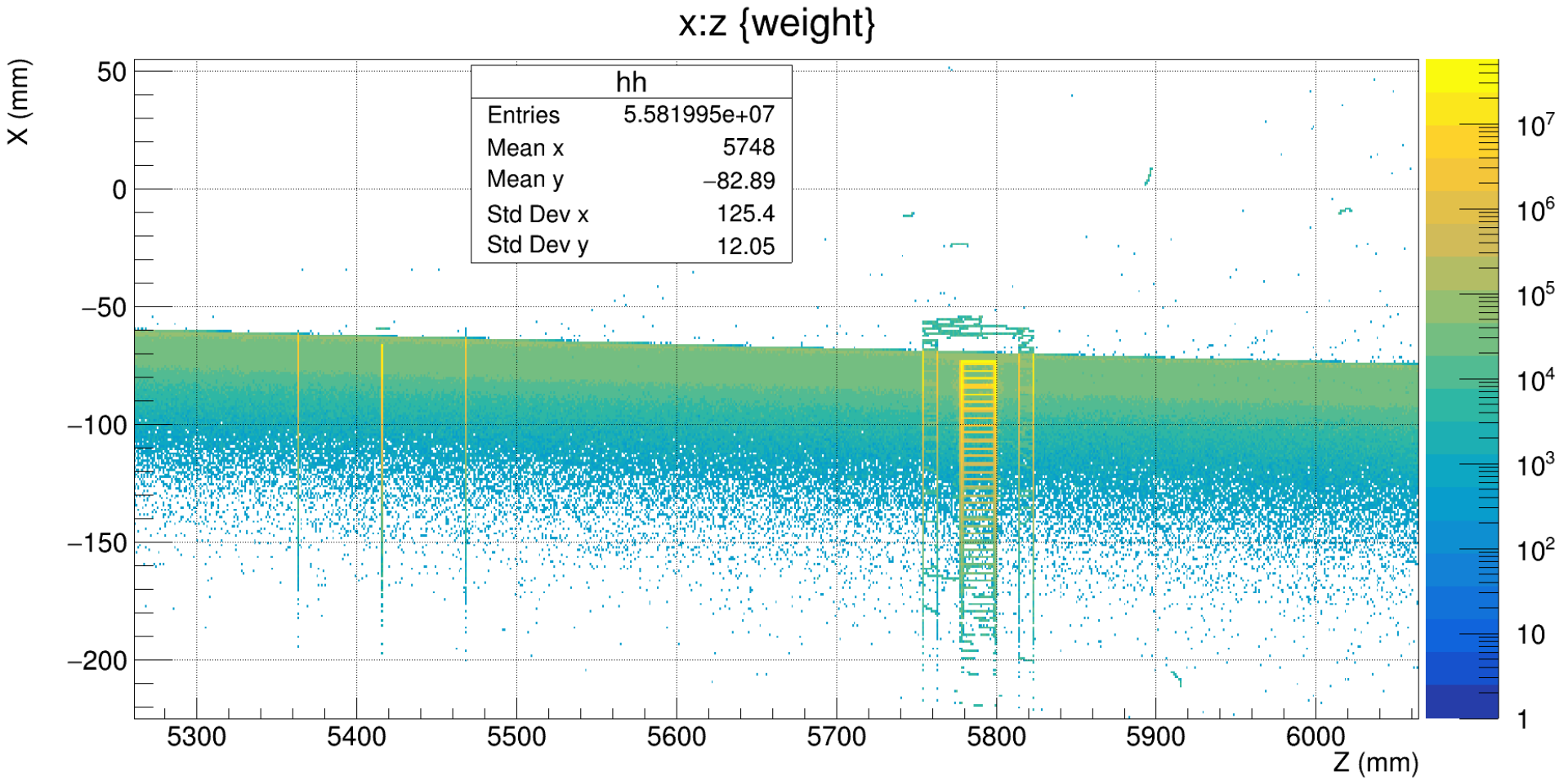
../ptarmigan-v0.7-preview/e_laser/phase0/1.00_particles.h5



Primary electrons, zoom on screen and Cherenkov

Step points of first 200k electrons from

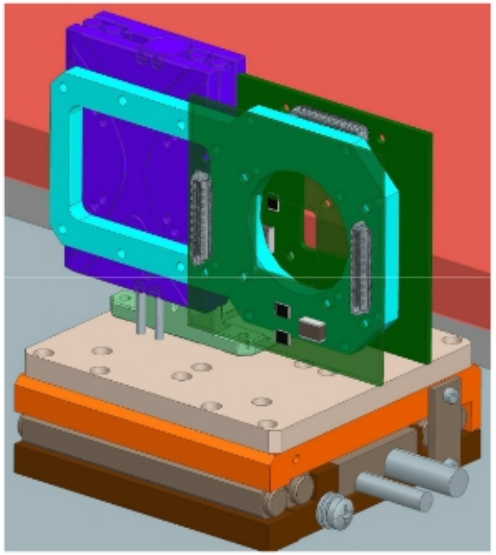
../ptarmigan-v0.7-preview/e_laser/phase0/1.00_particles.h5

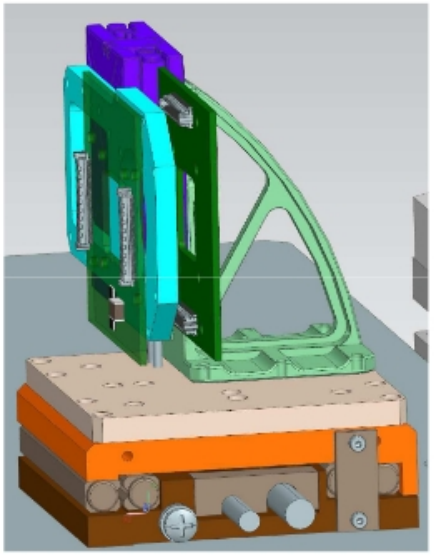


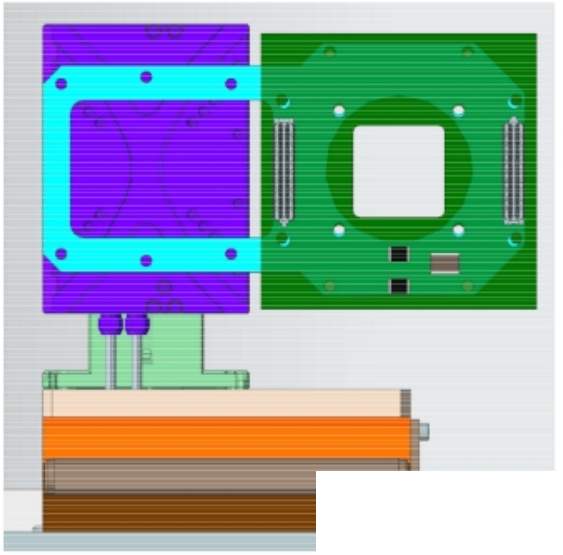
Profiler

Preliminary design

X axis PI V-408, Y axis Q-545
Vertical stage can be mounted off-axis wrt horizontal one, in order to equalize/center load distribution, avoid torque
Possible draw back:
V-408 is a magnetic drive, may create some magnetic field

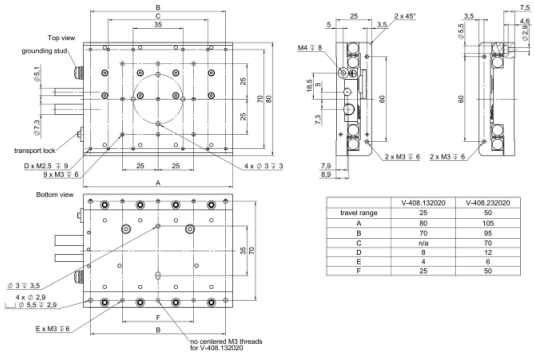






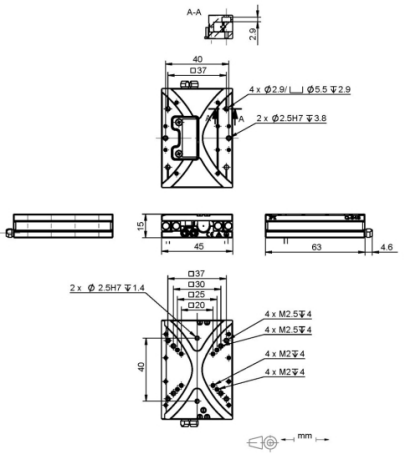
PI

Drawings / Images



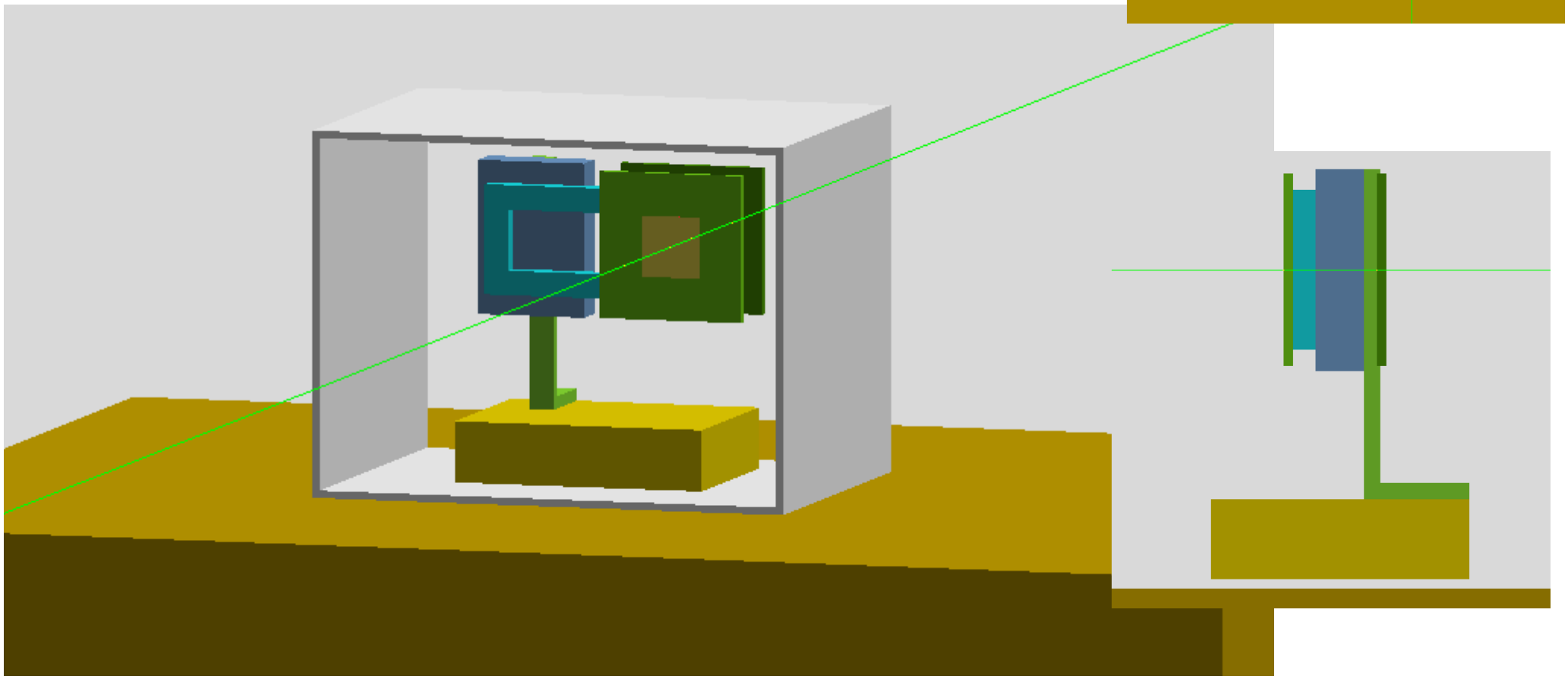
travel range	V-408.132020	V-408.232020
A	80	105
B	70	95
C	n/a	70
D	8	12
E	4	6
F	25	50

V-408, dimensions in mm

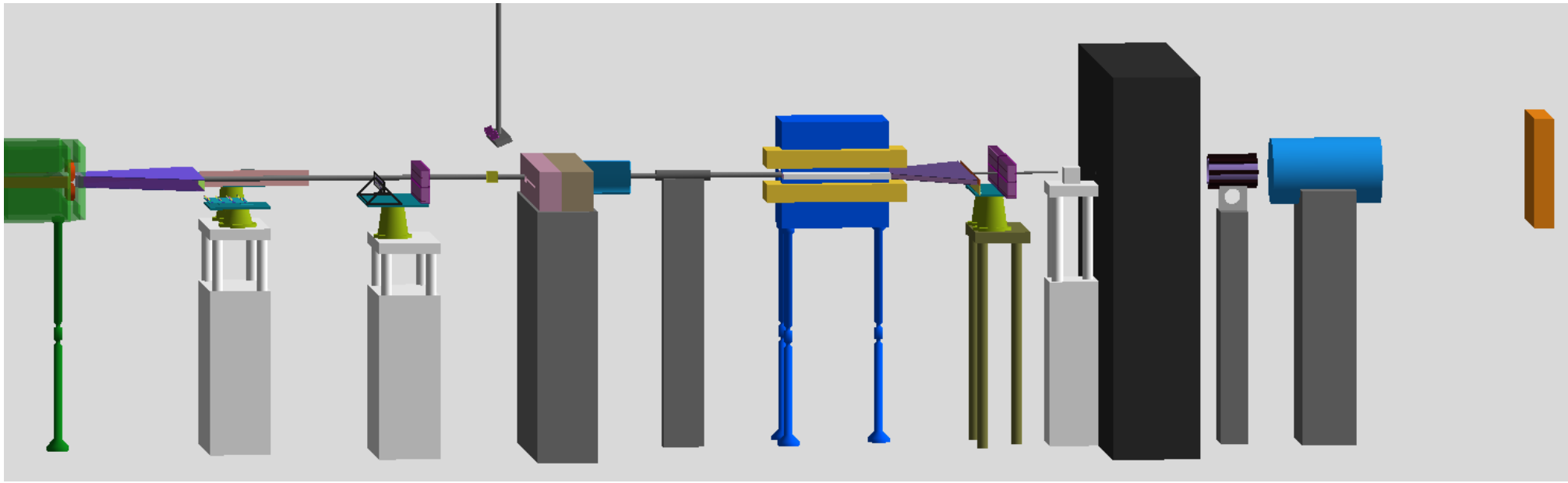


Profiler

- Sapphire sensor 100 5 μm
- Uniform Al metalization 5 μm
- PCB: CF4 5 mm
- Motors: Stainless steal;
- PCB holder: Al

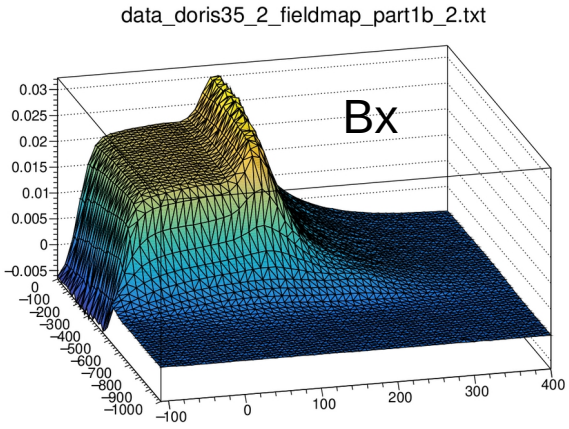


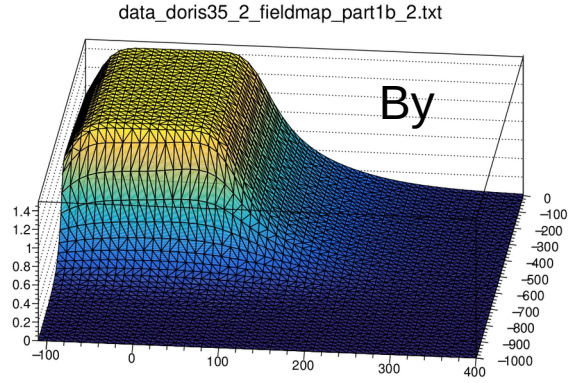
Supports

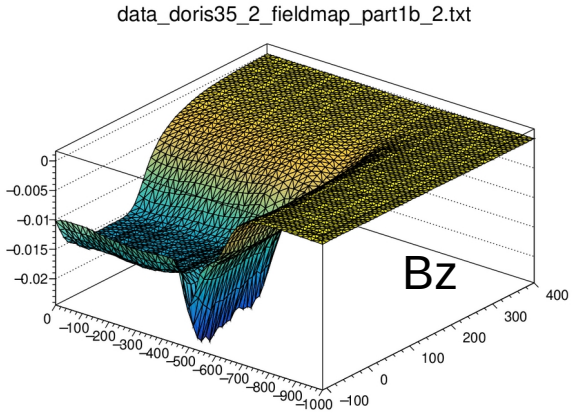


Magnetic Field Settings Interface

- Tree field components Bx, By, Bz;
- Models for spacial distribution:
  - Factorized on x, y, z;
  - Measured in two coordinates modeled in third one. E.g. xz and y
  - Measurements in xyz.








```
/lxphoton/det/magnet_field/value IP Bx 0.0 Tesla
/lxphoton/det/magnet_field/value IP By 1.0 Tesla
/lxphoton/det/magnet_field/value IP Bz 0.0 Tesla

/lxphoton/det/magnet_field/distribution  IP  Bx  x  const  -60.0   60.0   mm
/lxphoton/det/magnet_field/distribution  IP  Bx  y  const  -10.0   10.0   mm
/lxphoton/det/magnet_field/distribution  IP  Bx  z  const  -500.0  500.0  mm

/lxphoton/det/magnet_field/distribution  IP  Bz  x  const  -60.0   60.0   mm
/lxphoton/det/magnet_field/distribution  IP  Bz  y  const  -10.0   10.0   mm
/lxphoton/det/magnet_field/distribution  IP  Bz  z  const  -500.0  500.0  mm

#/lxphoton/det/magnet_field/distribution  IP  By  x  const  -60.0   60.0   mm
#/lxphoton/det/magnet_field/distribution  IP  By  y  const  -10.0   10.0   mm
#/lxphoton/det/magnet_field/distribution  IP  By  z  const  -500.0  500.0  mm

/lxphoton/det/magnet_field/distribution  IP  By  x  f_fd  -60.0   60.0   5.0  5.0
/lxphoton/det/magnet_field/distribution  IP  By  y  f_fd  -10.0   10.0   5.0  5.0
/lxphoton/det/magnet_field/distribution  IP  By  z  f_fd  -500.0  500.0  5.0  5.0

#/lxphoton/det/magnet_field/distribution  IP  By  x  f_err  -60.0   60.0   5.0  5
#/lxphoton/det/magnet_field/distribution  IP  By  y  f_err  -10.0   10.0   5.0  5
#/lxphoton/det/magnet_field/distribution  IP  By  z  f_err  -500.0  500.0  5.0  5

#/lxphoton/det/magnet_field/distribution  IP  By  xz  data file_name
#/lxphoton/det/magnet_field/distribution  IP  By  y   f_fd  -10.0   10.0   5.0  5
```