

Exercise 12: Voxel

Beginners' FLUKA Course

Exercise 12: Voxel

- Create a folder called ex12 and download
 - o download the solution of ex5.inp from the website
 - rename it to ex12.inp
 - download the ct.vxl file
 - and open the ex12.inp in *flair*
- In the geometry after the GEOBEGIN and before the first body add a VOXEL card having voxel origin [-2, -3, 1.5] and filename ct
- The ct.vxl contains 7 organs and has 20×20×20 bins of size [0.2, 0.3, 0.4] cm³ respectively
- Modify the regions of the target segments to remove the VOXEL body
- Assign VACUUM to VOXELOO1 and any material of your choice to the other voxel organ regions with several ASSSIGNMA cards
- Display the egg-shaped geometry (Y-Z and X-Y cuts) Note that some boundary lines disappear (due to alignment of the projection plane with the voxel sides)! Move the origin by a tiny amount to redisplay the boundaries

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- Add a USRBIN card scoring ENERGY with a Cartesian mesh from [-5,-5,-5] to [5,5,15] with [100×100×100] bins
- Run FLUKA for 1000 primary protons
- Display the USRBIN results in as Energy Deposition (GeV/cm³)
 - □ ZX @ x=0 cm for y in [-0.6, 0.6]
 - □ XY at z=5 cm for z in [-4.5, 5.5]
- and in a 1-dimensional profile along the Z axis. You can average your results over the whole Y range.