

Parameter Files for Beam Modules

Outline

The beam module definition requires the representation of its geometrical shape, structures, and materials. These parameters are specified in the parameter file and applied to the beam module. This document describes the format of the parameter file.

List of Beam modules

- G4MROOM
- G4MDisk, G4MDiskField
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Last updated on 2024-03-27

- G4MScanningMagnet
- G4MBoxDetector (Data format has been modified.)
- G4MWaterPhantom
- G4MCylinderPhantom
- G4MDICOM/G4MNestedDICOM
- G4MCouch
- G4MBoxDetector
- G4MWedge
- G4AnatomicalPhantom

History

2020-06-30 Updated for PTSproject-106-002-000.

2019-09-17 Updated for PTSproject-105-001-000.

2019-07-25 Updated for PTSproject-105-001-000.

2019-04-08 Updated for PTSproject-104-002-000.

2016-11-12 Updated for PTSproject-102-002-003.

2015-07-26 Updated for PTSproject-101-001-001.

2015-06-14 Updated for PTSproject-101-001-000.

2015-01-06 Updated for PTSproject-963-003-000.

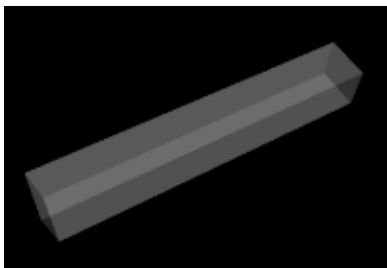
2014-12-25 Updated.

2014-09-05 Updated for PTSproject-20140905.

2014-10-31 Updated for PTSproject-20140XXX.

G4MRoom

This is a class for a treatment room. This registration is mandatory in PTSIM. The physical volume becomes a world volume in Geant4. In current version, the G4MRoom supports a box shape only.



Example picture.

File format and Example parameters

File format	Example file from ./data/Sample/G4Room/room.dat
{ID}	000
{Description}	1050 x 1050 x 7000 mm3 Treatment Room
{Lx} {Ly} {Lz}	1050. 1050. 7000.
{Material}	Air

Parameters

Parameter name	Type	Description
ID	s	Identification number (Not used in PTSIM)
Description	s	Description about the geometry (Not used in PTSIM)
Lx	d	Dimension of X (Full length of X side) [mm]
Ly	d	Dimension of Y (Full length of Y side) [mm]
Lz	d	Dimension of Z (Full length of Z side) [mm]
Material	s	Material name

G4MDisk, G4MDiskField



Example picture.

File format and Example parameters

File format	Example file from ./data/Sample/G4MDisk/scatter.dat
{ID}	000
{Description}	0.10 cm thick scatter
{Thick}	1.0
{Radius}	30.0
{Material}	lead
{Density}	11.08

Parameters

Parameter name	Type	Description
ID	s	Identification number (Not used in PTSIM)
Description	s	Description about the geometry (Not used in PTSIM)
Thick	d	Full thickness [mm]
Radius	d	Radius [mm]
Material	d	Material name
Density	s	Density of the material (Not used in PTSIM)

*G4MDiskField is a Cylindrical shape beam device with a uniform magnetic field. The magnetic field is set by using a user-interface command, which is described in the command-reference manual.

G4MBox, G4MBoxField



Example picture.

File format and Example parameters

File format	Example file from ./data/Sample/G4MBox/degrader.dat
{ID}	000
{Description}	1. cm thick degrader
{Lx} {Ly} {Lz}	200. 200. 10.
{Material}	Acrylic
{Density}	1.19

Parameters

Parameter name	Type	Description
ID	s	Identification number (Not used in PTSIM)
Description	s	Description about the geometry (Not used in PTSIM)
Lx	d	Dimension of X (Full length of X side) [mm]
Ly	d	Dimension of Y (Full length of Y side) [mm]
Lz	d	Dimension of Z (Full length of Z side) [mm]
Material	s	Material name
Density	d	Density of the material (Not used in PTSIM)

*G4MBoxField is a Box shape beam device with a uniform magnetic field. The magnetic field is set by using a user-interface command, which is described in the command-reference manual.

G4MDiskStructure



Example picture.

File format and Example parameters

File format	Example file from ./data/Sample/G4MDiskStructure/Collimator.dat
{N} {Mat_1} {Rout_1} {Thick_1} {PosZ_1} {Mat_i} {Rout_i} {Thick_i} {PosZ_i} {Mat_N} {Rout_N} {Thick_N} {PosZ_N}	2 Brass 350. 50. 0.0 Air 100. 50. 0.0

Parameters

Parameter name	Type	Description
N	i	Number of components (Number of lines followed)
Mat_i	s	Material name of i-th component
Rout_i	d	Outer radius of i-th component [mm]
Thick_i	d	Thickness of i-th component [mm]
PosZ_i	d	Z position offset relative to upper structure [mm]

Note: The components to be ordered from larger one to smaller one.

e.g. The component has to include the next component listed in the parameter file.

G4MDiskCollimator



Example picture.

File format and Example parameters

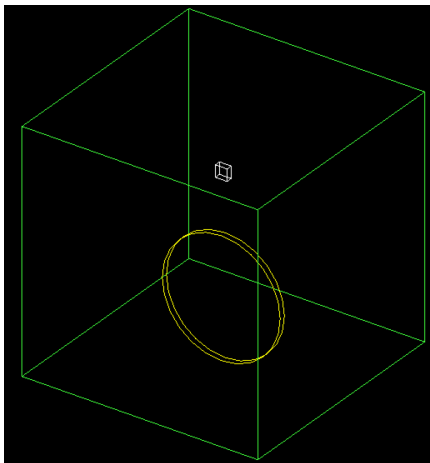
File format	Example file from ./data/Sample/G4MDiskCollimator/DiskColl.dat
{Coll_ID}	001
{Description}	Disk Collimator
{Rin} {Rout} {Thick}	50. 100.0 50.0
{Mat}	Brass

Parameters

Parameter name	Type	Description
Coll_ID	s	Collimator ID
Description	s	Description
Rin	d	Inner radius [mm]
Rout	d	Outer radius [mm]
Thick	d	Thickness [mm]
Mat	s	Material name

Note: G4Tubs is used for the G4MDiskCollimator. Therefore the other component can be placed inside the tube.

G4MBoxComposer



Example picture.

* Box composer creates a complex geometry, which consists of more than one beam module. The envelope of BoxComposer is the Box shape.

File format and Example parameters

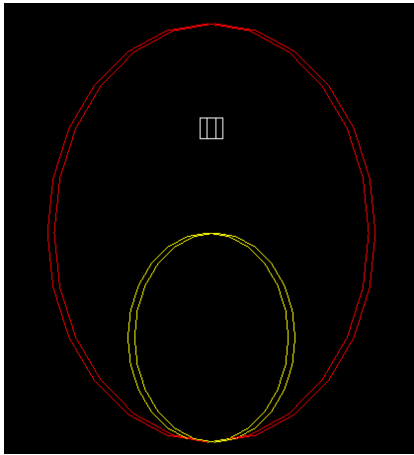
File format	Example file from ./data/Sample/G4MBoxComposer/CombBox.dat
{Lx} {Ly} {Lz}	200. 200. 200.
{Mat}	Brass
{N}	1
{ModuleName }	hole_box
....	hole_disk
{ModuleName_N}	

Parameters

Parameter name	Type	Description
Lx	d	Dimension of X (Full length of X side) [mm]
Ly	d	Dimension of Y (Full length of Y side) [mm]
Lz	d	Dimension of Z (Full length of Z side) [mm]
Material	s	Material name
N	i	Number of BeamModules (Number of lines followed)
ModuleName_i	s	Beam Module name of i-th component

Note: The beam modules placed inside have to be registered as beam modules. e.g. BoxComposer does not register the sub-modules automatically.

G4MDiskComposer



Example picture.

* Disk composer creates a complex geometry, which consists of more than one beam module. The envelope of DisComposer is the Disk shape.

File format and Example parameters

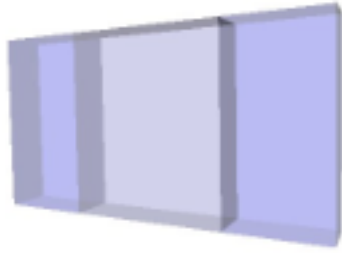
File format	Example file from ./data/Sample/G4MDiskComposer/CombDisk.dat
{R} {DZ} {Mat} {N} {ModuleName } {ModuleName_N}	200. 200. 200. Brass 1 hole_box hole_disk

Parameters

Parameter name	Type	Description
R	d	Radius of envelope [mm]
DZ	d	Thickness of envelope [mm]
Material	s	Material name
N	i	Number of BeamModules (Number of lines followed)
ModuleName_i	s	Beam Module name of i-th component

Note: The beam modules placed inside have to be registered as beam modules. e.g. DiskComposer does not register the sub-modules automatically.

G4MBlockCollimator



Example picture.

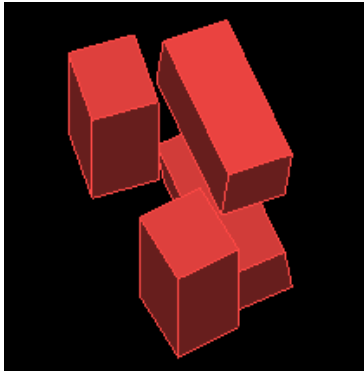
File format and Example parameters

File format	Example file from ./data/Sample/G4MBlockCollimator/Block.dat
{Lx} {Ly} {Lz}	250. 120. 62.
{Mat_Block}	Brass
{WinSizeX} {WinSizeY}	0. 100.
{Mat_Win}	Air

Parameters

Parameter name	Type	Description
Lx	d	Dimension of X of Block (Full length of X side) [mm] Outer side of this module.
Ly	d	Dimension of Y of Block (Full length of Y side) [mm] Outer side of this module.
Lz	d	Dimension of Z of Block (Full length of Z side) [mm] Outer side of this module.
Mat_Block	s	Material name of block
WinSizeX	d	The opening window size in X direction (Full length) [mm]
WinSizeY	d	The opening window size in Y direction (Full length) [mm]
Mat_Win	s	Material name of window area

G4MJaw



Example picture.

The class represents only one side of Jaws.

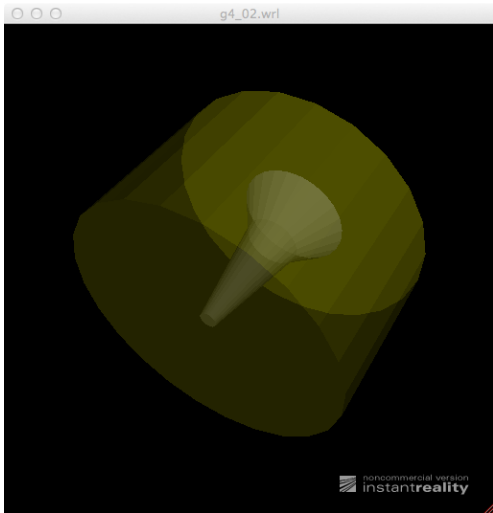
File format and Example parameters

File format	Example file from ./data/Sample/G4MJaw/jawX1.dat
{Lx} {Ly} {Lz}	90. 186. 78.
{Mat_Block}	G4_Fe
{SourceDist } {Aperture}	1000. -100.
{Zposition}	360.
{DirectionFlag}	-1

Parameters

Parameter name	Type	Description
Lx	d	Dimension of X of Block (Full length of X side) [mm] Outer side of this module.
Ly	d	Dimension of Y of Block (Full length of Y side) [mm] Outer side of this module.
Lz	d	Dimension of Z of Block (Full length of Z side) [mm] Outer side of this module.
Mat_Block	s	Material name of block
SourceDist	d	Distance from isocenter to source position [mm]
Aperture	d	Aperture at isocenter plane with positive or negative sign) [mm]
DirectionFlag	i	-1 for -X, +1 for +X, -2 fpr -Y, +2 for +Y

G4MPolyCones



Example picture.

File format and Example parameters

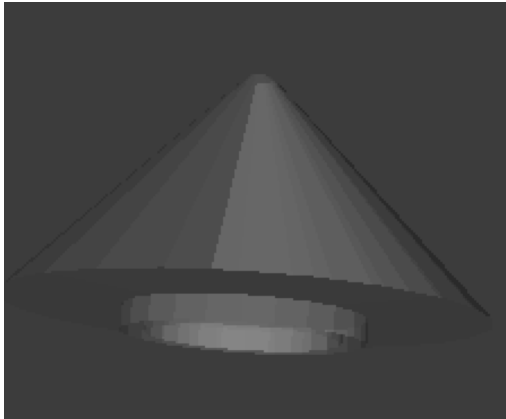
File format	Example
{ID}	FFLA1A
{Description}	# Flattening Filter in medical linac example.
{Mat} {Rin} {Rout} {Thick}	
{N}	G4_AIR 0.0 50.60.081
{Mat_1}	1
{Nplane1}	G4_Cu
{Z_11} {Rin_11} {Rout_11}	3
...	-25.0405 0.000 3.000
{Z_ij} {Rin_ij} {Rout_ij}	14.9595 0.000 10.000
...	30.0405 0.000 20.000
{Z_Nplane1} {Rin_Nplane1} {Rout_Nplane1}	
...	
{Mat_N}	
{NplaneN}	
{Z_N1} {Rin_N1} {Rout_N1}	
...	
{Z_NplaneN}{Rin_NplaneN} {Rout_NplaneN}	

Parameters

Parameter name	Type	Description
ID	s	Identification number (Not used in PTSIM)
Description	s	Description about the geometry (Not used in PTSIM)
Mat	s	Material of envelope
Rin	d	Inner radius of envelope [mm]
Rout	d	Outer radius of envelope [mm]
Thick	d	Thickness of envelope [mm]
N	i	Number of Cones
Mat_i	s	Material of i-th Cone
Nplane_i	i	Number of planes in i-th Cone
Rin_ij	d	Inner radius of ith-Cone j-th plane
Rout_ij	d	Outer radius of ith-Cone j-th plane
Z_ij	d	Position Z of ith-Cone j-th plane

*) This shape assumes that the envelop is of Disk shape.

G4MSPolyCone



Example picture.

File format and Example parameters

File format	Example
{ID}	S1A
{Description}	# Flattening Filter in medical linac example.
{Mat}	G4_Cu
{Nplane1}	4
{Z_1} {Rin_1} {Rout_1}	-25.0405 1.000 3.000
...	
{Z_i} {Rin_i} {Rout_i}	24.9595 45.000 50.000
...	25.0000 20.000 25.000
{Z_Nplane1} {Rin_Nplane1} {Rout_Nplane1}	30.0405 20.000 25.000

Parameters

Parameter name	Type	Description
ID	s	Identification number (Not used in PTSIM)
Description	s	Description about the geometry (Not used in PTSIM)
Mat	s	Material
Nplane	i	Number of planes in i-th Cone
Rin_i	d	Inner radius of i-th plane
Rout_i	d	Outer radius of ith plane
Z_i	d	Position Z of ith plane

G4MMLCX



Example picture.

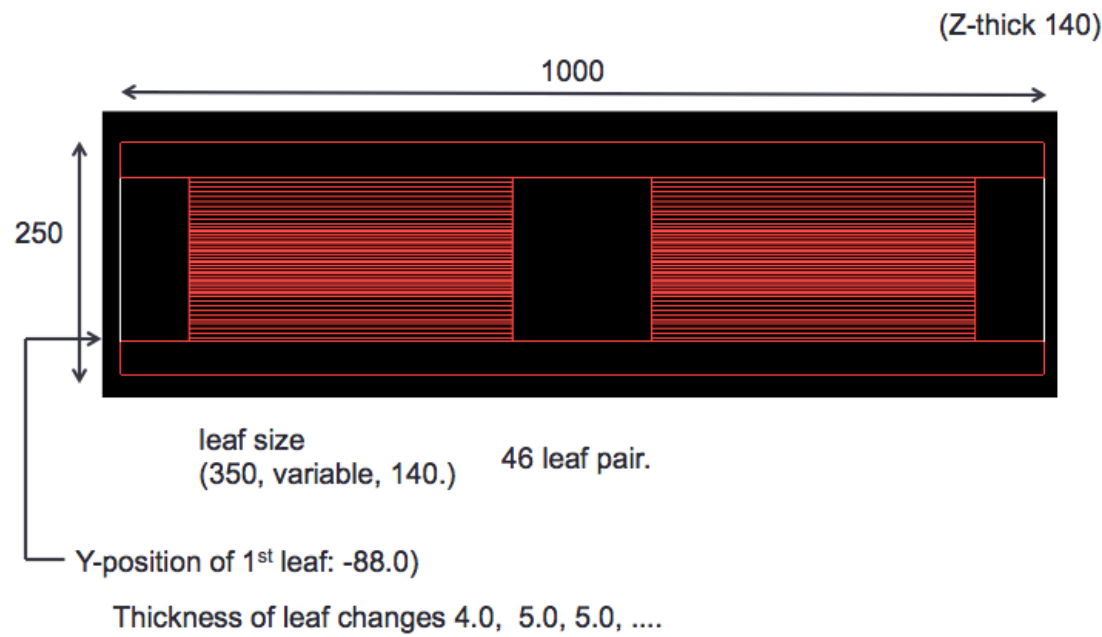
File format and Example parameters

File format	Example file from ./data/Sample/G4MMLCX/mlc.dat
{Lx} {Ly} {Lz}	1000. 280. 160.
{Mat_Frame }	Air
{Mat_leaf}	Iron
{Nleaf}	40
{Lx_leaf} {Ly_leaf} {Lz_leaf}	350. 5.00 100.
{Y0_offset}	-97.5
{xleft_1} {xright_1}	-75. 75.
....	-75. 75.
{xleft_i} {xright_i} (Snipped)
....	-75. 75.
{xleft_Nleaf} {xright_Nleaf}	-75. 75.

Parameters

Parameter name	Type	Description
Lx	d	Dimension of X of envelope (Full length of X side) [mm]
Ly	d	Dimension of Y of envelope (Full length of Y side) [mm]
Lz	d	Dimension of Z of envelope (Full length of Z side) [mm]
Mat_Frame	s	Material name of MLC frame (Usually Air)
Mat_leaf	s	Material name of leaf
Nleaf	i	Number of leaf pairs
Lx_leaf	d	Dimension of X of leaf block (Full length of X side) [mm]
Ly_leaf	d	Dimension of Y of leaf block (Full length of Y side) [mm]
Lz_leaf	d	Dimension of Z of leaf block (Full length of Z side) [mm]
Y0_offset	d	The Y position of first leaf. [mm] This is an offset for placing leafs in Y direction
xleft_i	d	The opening position of X for a left side leaf [mm]
xright_i	d	The opening position of X for a right side leaf [mm]

G4MMLCXV



Example picture.

File format and Example parameters

File format	Example file from ./data/Sample/G4MMLCXV/mlc.dat
{Lx} {Ly} {Lz}	1000. 250. 140. <== Frame size DX, DY, DZ [mm]
{Mat_Frame}	Air <== Frame Material
{Mat_leaf}	Iron <== Leaf Material
{Nleaf}	46 <== Number of leaf pairs (Nleaf)
{Lx_leaf} {Ly_leaf} {Lz_leaf}	350. -1 140. <== Leaf Size DX,DY,DZ[mm](Dy must be
{Y0_offset}	<0.0).
{Dy_1} {xleft_1} {xright_1}	-88.00 <== Y-Offset of first leaf [mm]
....	4.0 -75. 75. <== 1st and (Nleaf+1)th leafs' DY and
{Dy_2} {xleft_i} {xright_i}	opening position.
....	5.0 -75. 75. <== (If Ly_leaf> 0.0, Dy_2 must be
{Dy_Nleaf} {xleft_Nleaf}	omitted like MLCX.)
{xright_Nleaf}	5.0 -75. 75.
	5.0 -75. 75.
 Continue (1 st to Nleaf)

Parameters

Parameter name	Type	Description
Lx	d	Dimension of X of envelope (Full length of X side) [mm]
Ly	d	Dimension of Y of envelope (Full length of Y side) [mm]
Lz	d	Dimension of Z of envelope (Full length of Z side) [mm]
Mat_Frame	s	Material name of MLC frame (Usually Air)
Mat_leaf	s	Material name of leaf
Nleaf	i	Number of leaf pairs
Lx_leaf	d	Dimension of X of leaf block (Full length of X side) [mm]
Ly_leaf	d	Dimension of Y of leaf block (Full length of Y side) [mm] This number must be negative (i.e. -1 for variable thick MLC). If This number is positive (>0), MLCXV becomes same as MLCX.
Lz_leaf	d	Dimension of Z of leaf block (Full length of Z side) [mm]
Y0_offset	d	The Y position of first leaf. [mm] This is an offset for placing leafs in Y direction
Dy_i	d	Thickness of this leaf. (Ly_lead must be -1.)
xleft_i	d	The opening position of X for a left side leaf [mm]
xright_i	d	The opening position of X for a right side leaf [mm]

G4MPropellerBlades



Example picture.

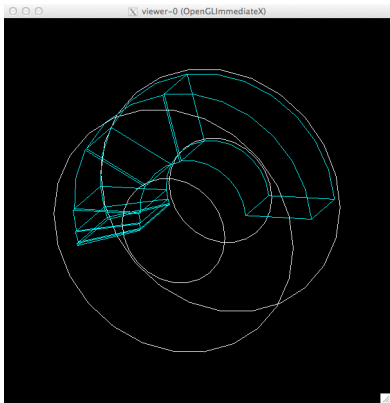
File format and Example parameters

File format	Example file from ./data/Sample/G4MPropellerBlades/blade.dat
{Mat_env} {Nfin}	Air 4
{Mat_fin} {Rmax} {Nplate}	Acrylic 130. 10
{Ang_1} {Thick_1}	70.0 0.5
....	65.0 0.5
{Ang_i} {Thick_i}	60.0 0.5
....	55.0 0.5
{Ang_Nfin} {Thick_Nfin}	50.0 0.5
	45.0 0.5
	40.0 0.5
 snipped.

Parameters

Parameter name	Type	Description
Mat_env	s	Material name of envelope
Nfin	i	Number of fins in the propeller
Mat_fin	s	Material name of fin
Rmax	d	Maximum radius of fin [mm]
Nplate	i	Number of plate used in a fin
Ang_i	d	Opening angle of i-th plate [deg]
Thick_i	d	Thickness of i-th plate [mm]

G4MRotatingRangeModulator



File format and Example parameters

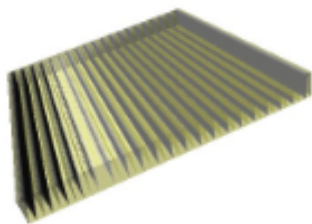
File format	Example
<pre>{ID} {Description} {Mat} {Rin} {Rout} {Thick} {N} {OffZ_1} {Dir_1} {Ntrak_1} {Rin_11} {Rout_11} {OffPhi_11} {Nseg_1} {Mat_111} {Phi_111} {Thick_111} {Mat_11k} {Phi_11k} {Thick_11k} ... {Mat_11Nseg_1} {Phi_11Nseg_1} {Thick_11Nseg_1} {Rin_ij} {Rout_ij} {OffPhi_ij} {Nseg_j} {Mat_ijk} {Phi_ijk} {Thick_ijk} {OffZ_N} {Dir_N} {Ntrak_N}</pre>	<pre>RM1 # Rotating Range Modulator (Sample) Air 70. 163. 156.4 1 -68.8 -1 1 70. 160. 5. 7 Acrylic 100.00 77.0 Acrylic 50.00 82.0 Acrylic 30.00 87.0 Acrylic 10.00 92.0 Acrylic 5.00 96.0 Acrylic 1.00 101.0 Acrylic 1.00 0.</pre>

{Rin_N} {Rout_N} {OffPhi_N} {Nseg_N}	
--	--

Parameters

Parameter name	Type	Description
ID	s	Identification number (Not used in PTSIM)
Description	s	Description about the geometry (Not used in PTSIM)
Mat	s	Material of envelope
Rin	d	Inner radius of envelope [mm]
Rout	d	Outer radius of envelope [mm]
Thick	d	Thickness of envelope [mm]
N	i	Number of Parts (Disks)
OffZ_i	d	Z offset of i-th part.
Dir_i	i	Direction of i-th part
Ntrack_i	i	Number of tracks in i-th part
Rin_ij	d	Inner radius i-th part, j-th track [mm]
Rout_ij	d	Outer radius i-th part, j-th track [mm]
OffPhi_ij	d	Offset/Start angle of i-th part, j-th track [deg]
Nseg_ij	i	Number of phi segment i-th part, j-th track
Mat_ijk	s	Material of i-th part, j-th track, k-th segment
Phi_ijk	d	Phi open angle of i-th part, j-th track, k-th segment (deg)
thick_ijk	d	Thick of i-th part, j-th track, k-th segment [mm]

G4MRigeFilter



```
// -----
// RidgeFileter
//
// Constructor
//   G4MRidgeFilter(const G4String& name, const G4String& mat,
//                 G4int nbar, G4double barpitch, G4double barlen,
//                 const std::vector<G4double>& xfin,
//                 const std::vector<G4double>& zfin)
//   nbar : Number of bars
//   barpitch : The pitch between adjacent bars.
//              nbar*barpitch defines a size of x direction of
//              the ridge filter.
//   barlen : length of the bar, i.e y length
//   xfin : vector of fin's outer edge ( x-position. )
//          ( Last value must be center of a ridge.)
//          ( i.e Must be equals to barpitch/2.)
//   zfin : vector of fin's hieght. ( z-direction )
//   Exsample (HIBMC representation)
//   x      z      gives xHalfWidth  xPosition
//   --|-----|-----|-----|-----|
//   --| 1.12755  0      0.170173    1.202277
//   ---| 1.467896 2.347418 0.142449    0.889655
//   ---| 1.752794 4.694836 0.106519    0.640687
//   ---| 1.965832 7.042253 0.102677    0.431492
//   ---| 2.171185 9.389671 0.077001    0.251814
//   ---| 2.325188 11.73709 0.097406    0.0087406(half)
//   ---| 2.5      14.08451
//   -----|-----|-----|-----|
//   where
//   xHalfWidth = (x[i+1]-x[i])/2,
//   xPosition  = (barpitch/2)-(x[i+1]+x[i])/2,
// -----
```

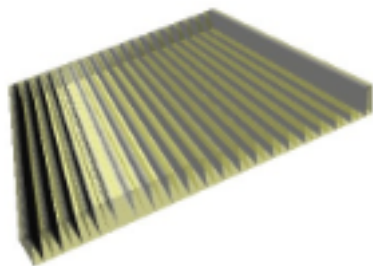
File format and Example parameters

File format	Example file from ./data/Sample/G4MRidgeFilter/ridge.dat
{ID}	0000
{Description}	Dummy ridge
{PID}	2122
{Ebeam} {SCTID}	150 000
{SOBP} {OWET} {WET}	30.0 0.0 13.75
{Material}	Aluminum
{Nbar}	10
{Lbar}	150.0
{BarPitch}	4.0
{SideID}	1
{Nstep}	5
{RidgeX_1} {RidgeH_1}	1.00 0
.....	1.25 2.
{RidgeX_i} {RidgeH_i}	1.50 4.
.....	1.75 10.
{RidgeX_Nbar} {RidgeH_Nbar}	2.00 12.

Parameters

Parameter name	Type	Description
ID	s	Identification number (Not used in PTSIM)
Description	s	Description about the geometry (Not used in PTSIM)
PID	i	Particle ID for designing this RF. (Not used in PTSIM)
Ebeam	d	Beam Energy for designing this RF. (Not used in PTSIM)
SCTID	i	Scatter ID with combination of this RF. (Not used in PTSIM)
SOBP	d	Nominal modulation width (Not used in PTSIM)
OWET	d	offset WET (Not used in PTSIM)
WET	d	Average WET (Not used in PTSIM)
Material	s	Material name of ridge filter
Nbar	i	Number of bars
Lbar	d	Length of bars in x side [mm]
BarPitch	d	Pitch of bars [mm]
SideID	i	Single side or Double side (Not used in PTSIM)
Nstep	i	Number of steps in a ridge shape Corresponding to number of lines (data points below)
RidgeX_i	d	Ridge shape X [mm]
RidgeH_i	d	Ridge shape Y [mm]

G4MRigeWSctFilter



Example picture.

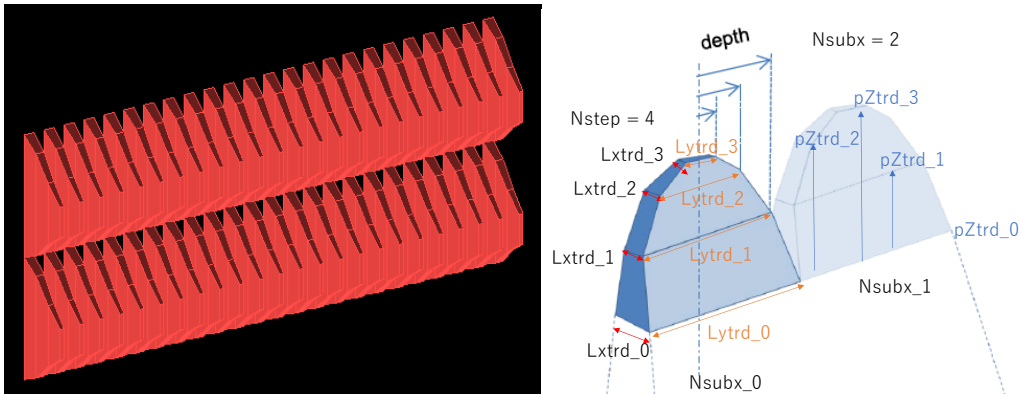
File format and Example parameters

File format	Example file from ./data/Sample/G4MRidgeFilter/ridge.dat	
{ID}	0000	
{Description}	Dummy ridge	
{PID}	2122	
{Ebeam} {SCTID}	150 000	
{SOBP} {OWET} {WET}	30.0 0.0 13.75	
{Material}	Aluminum	
{Nbar}	10	
{Lbar}	150.0	
{BarPitch}	4.0	
{SideID}	1	
{Nstep}	5	
{RidgeX_1} {RidgeH_1}	1.00	0
.....	1.25	2.
{RidgeX_i} {RidgeH_i}	1.50	4.
.....	1.75	10.
{RidgeX_Nbar} {RidgeH_Nbar}	2.00	12.
{SctMat}	Brass	
{SctThick}	1.85	

Parameters

Parameter name	Type	Description
ID	s	Identification number (Not used in PTSIM)
Description	s	Description about the geometry (Not used in PTSIM)
PID	i	Particle ID for designing this RF. (Not used in PTSIM)
Ebeam	d	Beam Energy for designing this RF. (Not used in PTSIM)
SCTID	i	Scatter ID with combination of this RF. (Not used in PTSIM)
SOBP	d	Nominal modulation width (Not used in PTSIM)
OWET	d	offset WET (Not used in PTSIM)
WET	d	Average WET (Not used in PTSIM)
Material	s	Material name of ridge filter
Nbar	i	Number of bars
Lbar	d	Length of bars in x side [mm]
BarPitch	d	Pitch of Bars [mm]
SideID	i	Single side or Double side (Not used in PTSIM)
Nstep	i	Number of steps in a ridge shape Corresponding to number of lines (data points below)
RidgeX_i	d	Ridge shape X [mm]
RidgeH_i	d	Ridge shape Y [mm]
SctMat	s	Material name of attached scatter
SctThick	d	Thickness of attached scatter [mm]

G4MTrdRige



Example picture.

File format and Example parameters

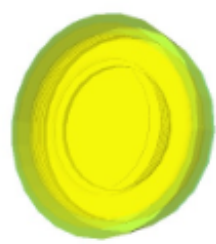
File format	Example file from ./data/Sample/G4MTrdRdge/ridge3.dat
{Material}	Aluminum
{Nbar}	24
{BarPitch}	10.0
{Nsubx}	2
{Nstep}	4
{Lxtrd_0} {Lytrd_0} {pZtrd_0}	5. 60. 0.
.....	4. 50. 10.
{Lxtrd_i} {Lytrd_i} {pZtrd_i}	3. 30. 20.
.....	2. 15. 30.
{Lxtrd_n} {Lytrd_n} {pZtrd_n}	

Parameters

Parameter name	Type	Description
Material	s	Material name of ridge filter
Nbar	i	Number of bars
BarPitch	d	Pitch of Bars [mm]
Nsubx	i	Number of sub-ridges in a bar.
Nstep	i	Number of steps in a ridge Corresponding to number of lines (data points below)

Lxtrd_i	d	Length of Trd bottom surface in X [mm]
Lytrd_i	d	Length of Trd bottom surface in Y [mm]
pZtrd_i	d	Position of Trd bottom surface in Z [mm]

G4MTubsMonitor



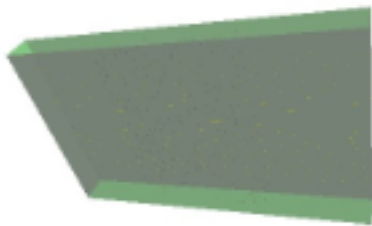
File format and Example parameters

File format	Example file from ./data/Sample/G4MTubsMonitor/ Monitor.dat
{Mat} {N}	Air 10
{Mat_1} {Rin_1} {Rout_1} {Thick_1} {PosZ_1}	Aluminum 0 98 0.02 30.
....	Aluminum 0 98 0.02 10.
{Mat_1} {Rin_1} {Rout_1} {Thick_1} {PosZ_i}	Aluminum 0 98 0.02 0.
...	Aluminum 0 98 0.02 -10.
{Mat_N} {Rin_N} {Rout_N} {Thick_N} {PosZ_N}	Aluminum 0 98 0.02 -10.0
	Aluminum 0 98 0.02 -30.0
	Aluminum 130 150 60 0.
	G10 98 130 4 13.0
	G10 96 130 4 7.0
	G10 96 130 4 1.0

Parameters

Parameter name	Type	Description
Mat	s	Material name of envelope
N	i	Number of component (Number of lines followed)
Mat_i	s	Material name of i-th component
Rin_i	d	Inner radius of i-th component [mm]
Rout_i	d	Outer radius of i-th component [mm]
Thick_i	d	Thickness of i-th component [mm]
PosZ_i	d	Z position offset relative to envelop frame [mm]

G4MWireMonitor



Example picture.

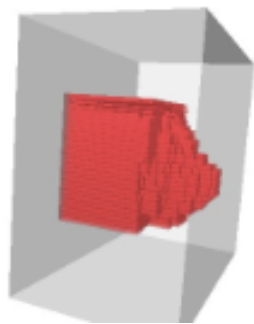
File format and Example parameters

File format	Example file from ./data/Sample/G4MWireMonitor/ WireChamber.dat
<pre>{Mat} {N} {Mat_1} {Lx_1} {Ly_1} {Lz_1} {PZ_1} {Mat_i} {Lx_i} {Ly_i} {Lz_i} {PZ_i} {Mat_N} {Lx_N} {Ly_N} {Lz_N} {PZ_N} {Nlayer} {Nw_1} {Slant_1} {Pitch_1} {WMat_1} {Wradius_1} {WLength_1} {Nw_i} {Slant_i} {Pitch_i} {WMat_i} {Wrad_i} {WLen_i} {Nw_Nlayer} {Slant+Nlayer} {Pitch_Nlayer} {WMat_1_Nlay} {Wrad+Nlayer} {WLen_Nlayer}</pre>	<pre>Nitrogen 2 Kapton 300. 200. 0.15 -20. Kapton 300. 200. 0.15 20. 2 20 0. 10. Titanium 0.03 200. -5. 20 90. 10. Titanium 0.03 300. +5.</pre>

Parameters

Parameter name	Type	Description
Mat	s	Material name of envelope
N	i	Number of plate type component
BMat_i	s	Material name of i-th plate
Lx_i	d	Dimension of X of i-th plate (Full length of X side) [mm]
Ly_i	d	Dimension of Y of i-th plate (Full length of Y side) [mm]
Lz_i	d	Dimension of Z of i-th plate (Full length of Z side) [mm]
BPZ_i	d	Position of Z of i-th plate relative to envelop [mm]
Nlayer	i	Number of wire layers
Nw_i	i	Number of wires in i-th layer
Slant_i	d	Slant angle of t-th wire layer [degree]
Pitch_i	d	Wire pitch in i-th wire layer [mm]
WMat_i	s	Material name of i-th wire
Wrad_i	d	Radius of i-th wire [mm]
WLen_i	d	Length of i-th wire [mm]

G4MBolus



Example picture.

File format and Example parameters

File format	Example file from ./data/Sample/G4MBolus/bolus.dat
{Lx} {Ly} {Lz}	200. 200. 110.
{Mat}	Polyethylene
{Nx} {Ny}	19 19
{X0} {Y0}	-30. -30.
{Xpitch} {Ypitch}	3.5 3.5
{Drill Size}	0.
{T_00} ... {T_Nx0}	110. 110. 110. 110. 110. 110. 110. 110. 110. 110. 110. 110.
...	110. 110. 110. 110. 110. 110. 10. 110. 110. 110. 110. 110.
.. {T_ij}..	110. 110. 110. 110. 110. 110. 110. 110. 110. 110. 110. 110.
...	10. 110. 110. 110. 110. 110. 110. 110. 110. 110. 110. 110.
... {T_NxNy}	110. 110. 110. 110. 110. 110. 10. 110. 110.Snipped.....

Parameters

Parameter name	Type	Description
Lx	d	Dimension of X (Full length of X side) [mm]
Ly	d	Dimension of Y (Full length of Y side) [mm]
Lz	d	Dimension of Z (Full length of Z side) [mm]
Mat	s	Material name of bolus
Nx	i	Number of segmentation in X

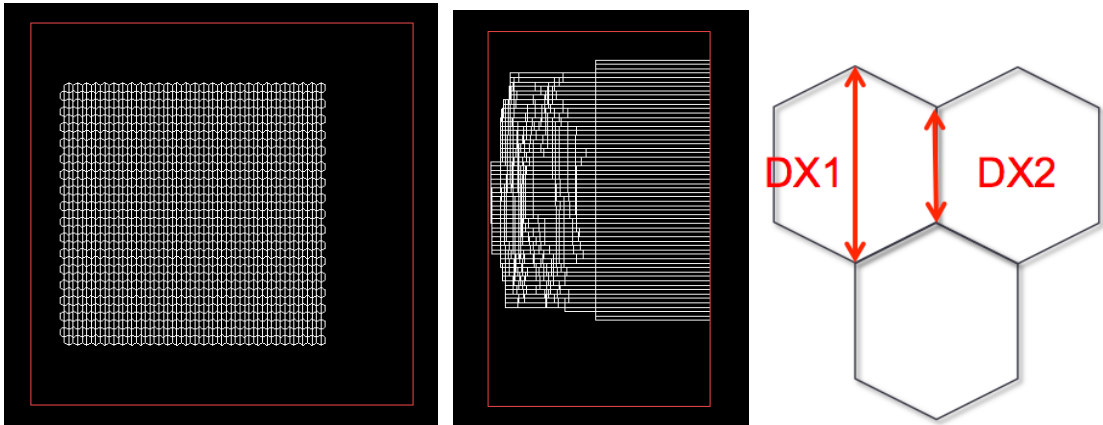
Ny	i	Number of segmentation in X
X0	d	The X offset of first segment's position [mm]
Y0	d	The Y offset of first segment's position [mm]
Xpitch	d	Drill pitch in X [mm]
Ypitch	d	Drill pitch in Y [mm]
Drill size	d	Drill size for smearing (*1)
T_ij	d	Thickness in (i,j) The order is from (-x, -y) to (+x,+y)

(*1) Drill size is for the parameter to take into account smearing due to drill size.

If the Drill size is less than Xpitch and Ypitch, it is not used.

If it is larger than Xpitch or Ypitch, the adjacent towers are also affected.

G4MHoneyCombBolus



Example picture.

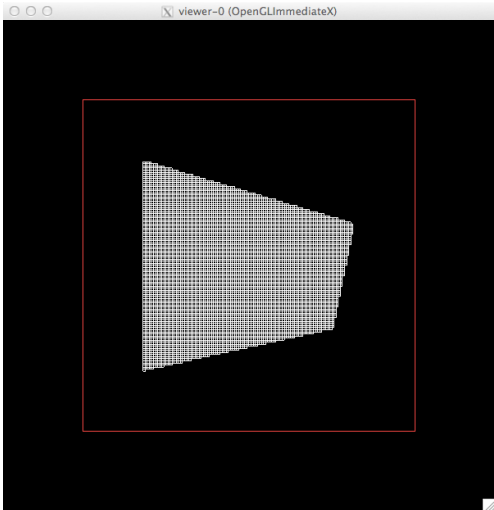
File format and Example parameters

File format	Example file from ./data/Sample/G4MBolus/bolus.dat
{Lx} {Ly} {Lz}	170. 170. 100.
{Mat}	Polyethylene
{Nx} {Ny}	10 10
{X0} {Y0}	-30. -30.
{Xpitch} {Ypitch}	5. 8.
{Fact_DX2/DX1}	0.5
{T_00} ... {T_Nx0}	50. 40. 30. 20. 10. 10. 20. 30. 40. 50.
...	50. 40. 30. 20. 10. 10. 20. 30. 40. 50.
.. {T_ij}..	50. 40. 30. 20. 10. 10. 20. 30. 40. 50.
...	50. 40. 30. 20. 10. 10. 20. 30. 40. 50.
... {T_NxNy}	50. 40. 30. 20. 10. 10. 20. 30. 40. 50.
	50. 40. 30. 20. 10. 10. 20. 30. 40. 50.
	50. 40. 30. 20. 10. 10. 20. 30. 40. 50.
	50. 40. 30. 20. 10. 10. 20. 30. 40. 50.
	50. 40. 30. 20. 10. 10. 20. 30. 40. 50.
	50. 40. 30. 20. 10. 10. 20. 30. 40. 50.
Snipped.....

Parameters

Parameter name	Type	Description
Lx	d	Dimension of X (Full length of X side) [mm]
Ly	d	Dimension of Y (Full length of Y side) [mm]
Lz	d	Dimension of Z (Full length of Z side) [mm]
Mat	s	Material name of bolus
Nx	i	Number of segmentation in X
Ny	i	Number of segmentation in X
X0	d	The X offset of first segment's position [mm]
Y0	d	The Y offset of first segment's position [mm]
Xpitch	d	Drill pitch in X [mm]
Ypitch	d	Drill pitch in Y [mm]
Fact_DX2/DX1	d	HoneyComb factor DX2/DX1 as in the figure.
T_ij	d	Thickness in (i,j) The order is from (-x, -y) to (+x,+y)

G4MPTCollimator



Example picture.

File format and Example parameters

File format	Example
{Lx} {Ly} {Lz}	160. 160. 70.
{Mat}	Brass
{Xpitch} {Ypitch}	1 1
{N}	5
{X_1} {Y_1}	-50 -50
...	-50 50
{X_i} {Y_i}	50 20
...	40 -30
{X_N} {Y_N}	-50 -50 <= Last point must be the first
{IxDir} {IyDir}	one. 1 1

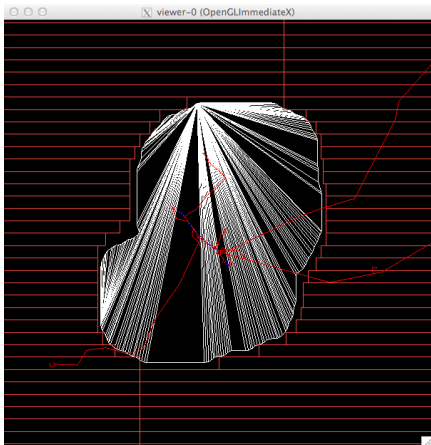
Parameters

Parameter name	Type	Description
Lx	d	Dimension of X (Full length of X side) [mm]
Ly	d	Dimension of Y (Full length of Y side) [mm]
Lz	d	Dimension of Z (Full length of Z side) [mm]

Last updated on 2024-03-27

Mat	s	Material name
Xpitch	d	Pitch of mesh in X direction [mm]
Ypitch	d	Pitch of mesh in Y direction [mm]
N	d	Number of data points
X_i	d	X coordinate of the point [mm]
Y_i	d	X coordinate of the point [mm]
IxDir	i	Direction of axis in X (Must be 1)
IyDir	i	Direction of axis in Y (Must be 1)

G4MPTCollimatorEx



Example picture. (The area covered by the white lines is the PTCollimator.)

File format and Example parameters (Same as G4MPTCollimator)

File format	Example
{Lx} {Ly} {Lz}	160. 160. 70.
{Mat}	Brass
{Xpitch} {Ypitch}	1 1
{N}	5
{X_1} {Y_1}	-50 -50
...	-50 50
{X_i} {Y_i}	50 20
...	40 -30
{X_N} {Y_N}	-50 -50 <= Last point must be the first
{Order }	one.
	1

Parameters

Parameter name	Type	Description
Lx	d	Dimension of X (Full length of X side) [mm]
Ly	d	Dimension of Y (Full length of Y side) [mm]
Lz	d	Dimension of Z (Full length of Z side) [mm]
Mat	s	Material name
Xpitch	d	Pitch of mesh in X direction [mm] (Not used)
Ypitch	d	Pitch of mesh in Y direction [mm] (Not used)
N	d	Number of data points
X_i	d	X coordinate of the point [mm]
Y_i	d	X coordinate of the point [mm]
Order	i	Order of (X_i, Y_i) points. 1 = Clockwise, -1=Anticlockwise.

G4MWobblerMagnet



Example picture.

File format and Example parameters

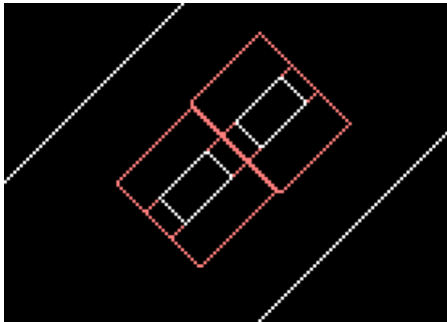
File format	Example file from ./data/Sample/G4MWobblerMagnet/wobblerX.dat		
{Lx} {Ly} {Lz}	300.	300.	150.
{Mat}	Iron		
{Gx } {Gy} {Gz}	150.	50.	150.
{MatG}	Air		
{PID} {Ebeam} {PZ}	2212	190.	3200.
{WRadius}	99.		
{DirX} {DirY}	1.	0	

File format	Example file from ./data/Sample/G4MWobblerMagnet/wobblerY.dat		
{Lx} {Ly} {Lz}	300.	300.	220.
{Mat}	Iron		
{Gx } {Gy} {Gz}	70.	150.	220.
{MatG}	Air		
{PID} {Ebeam} {PZ}	2212	190.	3000.
{WRadius}	99.		
{DirX} {DirY}	0.	1.	

Parameters

Parameter name	Type	Description
Lx	d	Dimension of X (Full length of X side) [mm]
Ly	d	Dimension of Y (Full length of Y side) [mm]
Lz	d	Dimension of Z (Full length of Z side) [mm]
Mat	s	Material name of Magnet
Gx	d	Dimension of X of Air Gap (Full length) [mm]
Gy	d	Dimension of Y of Air Gap (Full length) [mm]
Gz	d	Dimension of Z of Air Gap (Full length) [mm]
MatG	s	Material name of Gap
PID	i	Particle ID which is used to calculate B field.
Ebeam	d	Beam energy which is used to calculate B field [MeV]
PZ	d	Placement in a treatment room, which is used to calculate B field [mm]
WRadius	d	Wobbling radius at the isocenter [mm]
DirX	d	Wobbling direction. If x-direction, then set to 1.0
DirY	d	Wobbling direction. If y-direction, then set to 1.0

G4MScanningMagnet



Example picture.

File format and Example parameters

File format	Example file from ./data/Sample/G4MScanningMagnet/SCMX.dat		
{Lx} {Ly} {Lz}	480.	360.	364.
{Mat}	Iron		
{Gx} {Gy} {Gz}	140.	70.	240.
{MatG}	Air		
{PID} {Ebeam} {PZ}	2212	150.	2254.
{TargetPos}	100.		
{RasterDir} {Isign}	1	1	

File format	Example file from ./data/Sample/G4MScanningMagnet/SCMY.dat		
{Lx} {Ly} {Lz}	440.	640.	400.
{Mat}	Iron		
{Gx} {Gy} {Gz}	140.	170.	240.
{MatG}	Air		
{PID} {Ebeam} {PZ}	2212	150.	1859.
{TargetPos}	100.		
{RasterDir} {Isign}	2	-1	

Parameters

Parameter name	Type	Description
Lx	d	Dimension of X (Full length of X side) [mm]
Ly	d	Dimension of Y (Full length of Y side) [mm]
Lz	d	Dimension of Z (Full length of Z side) [mm]
Mat	s	Material name of Magnet
Gx	d	Dimension of X of Air Gap (Full length) [mm]
Gy	d	Dimension of Y of Air Gap (Full length) [mm]
Gz	d	Dimension of Z of Air Gap (Full length) [mm]
MatG	s	Material name of Gap.
PID	i	Particle ID which is used to calculate B field.
Ebeam	d	Beam energy which is used to calculate B field [MeV]
PZ	d	Placement in a treatment room, which is used to calculate B field [mm]
TargetPos	d	Default X (or Y) coordinate at the isocenter [mm]
RasterDir	i	B-field coordinate, 1, 2 or 3 choose x, y or z coordinates, respectively.
Isign	i	The sign (1 or -1) of B-field. It switches the direction of B-field, for example, +x or -x.

G4MWaterPhantom

File format and Example parameters

File format	Example file from ./data/Sample/G4MWaterPhantom/ waterphantom.dat
{Lx} {Ly} {Lz}	300. 300. 500.
{Mat}	G4_WATER
{Sx} {Sy} {Sz}	50. 50. 500.
{Nx} {Ny} {Nz}	100 100 500
{Sxp} {Syp} {Szp}	0. 0. 0.

Parameters

Parameter name	Type	Description
Lx	d	Dimension of X (Full length of X side) [mm]
Ly	d	Dimension of Y (Full length of Y side) [mm]
Lz	d	Dimension of Z (Full length of Z side) [mm]
Mat	s	Material name
Sx	d	Dimension of X of Sensitive volume (Full length) [mm]
Sy	d	Dimension of Y of Sensitive volume (Full length) [mm]
Sz	d	Dimension of Z of Sensitive volume (Full length) [mm]
Nx	i	Number of segmentation in X in sensitive volume
Ny	i	Number of segmentation in Y in sensitive volume
Nz	i	Number of segmentation in Z in sensitive volume
Sxp	d	X position of sensitive volume to mother [mm]
Syp	d	Y position of sensitive volume to mother [mm]
Szp	d	Z position of sensitive volume to mother [mm]

G4MCylinderPhantom

File format and Example parameters

File format	Example file from ./data/Sample/G4MCylinderPhantom/ cylphantom.dat
{R} {PHI} {Z}	300. 360. 500.
{Mat}	G4_WATER
{Sr} {Sphi} {Sz}	300. 360. 500.
{Nr} {Nphi} {Nz}	10 90 100
{SrOf} {SphiOf} {SzOf}	0. 0. 0.

Parameters

Parameter name	Type	Description
R	d	Radius [mm]
PHI	d	Phi angle [degree]
Z	d	Dimension of Z (Full length of Z side) [mm]
Mat	s	Material name
Sr	d	Radius of Sensitive volume (Full length) [mm]
Sphi	d	Phi angle of Sensitive volume [degree]
Sz	d	Dimension of Z of Sensitive volume (Full length) [mm]
Nr	i	Number of segmentation in R in sensitive volume
Nphi	i	Number of segmentation in Phi in sensitive volume
Nz	i	Number of segmentation in Z in sensitive volume
SrOf	d	R position of sensitive volume to mother [mm]
SphiOf	d	Phi angle of sensitive volume to mother [mm]
SzOff	d	Z position of sensitive volume to mother [mm]

G4MDICOM

File format and Example parameters

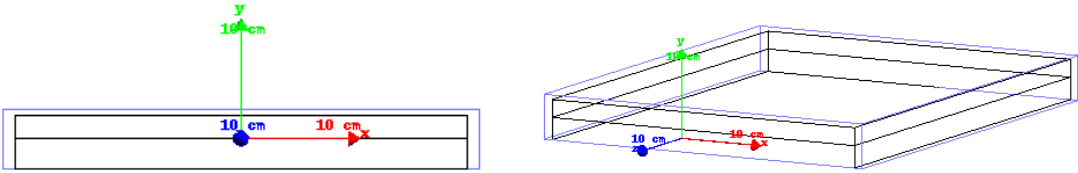
File format	Example file from <code>./data/Sample/G4MDICOM/dicom.dat</code>
{DICOMFILE}	<code>./data/Sample/dicom/DICOM.dat</code>
{CT2Density}	<code>./data/Sample/dicom/CT2Density.dat</code>
{MatType}	<code>./data/common/dicom/CT2Water.dat</code>
{MinCT} {MaxCT}	<code>-1000. 1000.</code>
{CTCutoff} {CTAir}	<code>-500. -1000.</code>
{DensResol}	<code>0.01</code>
{CubicReformSize}	<code>2.0</code>
{PixelCluster2D}	<code>1</code>
{ValidXmin} {ValidXmax}	<code>-200.0 +200.0</code>
{ValidYmin} {ValidYmax}	<code>-200.0 +200.0</code>
{TrimFlag}	<code>trim</code>
{IsoX} {IsoY} {IsoZ}	<code>0. 0. 0.</code>
{Gantry}	<code>45.</code>
{Couch}	<code>0.</code>

Parameters

Parameter name	Type	Description
DICOMFILE	s	File name of DICOM list
CT2Density	s	File name of CT to Density Lookup table
MatType	s	File name for material assignment
MinCT	d	Minimum CT value. The CT values are replaced to this value if it is less than this value.
MaxCT	d	Maximum CT value. The CT values are replaced to this value if it is laerger than this value.
CTCutoff	d	Cut off value for outline extraction
CTAir	d	CT value of Air, which is used to fill pixels around a patient

DensResol	d	Density resolution [g/cm3]
CubicReformSize	d	Cubic Reformation of voxel size in 3D [mm]
PixelCluster2D	i	Recombination of voxel size in 2D
ValidXmin	d	Minimum position of valid window in X [mm]
ValidXmax	d	Maximum position of valid window in X [mm]
ValidYmin	d	Minimum position of valid window in Y [mm]
ValidYmax	d	Maximum position of valid window in Y [mm]
TrimFlag	s	If "trim" then outside of valid window is stripped.
IsoX	d	X position of isocenter in CT frame [mm]
IsoY	d	Y position of isocenter in CT frame [mm]
IsoZ	d	Z position of isocenter in CT frame [mm]
Gantry	d	Gantry angle [deg]
Couch	d	Couch angle [deg]

G4MCouch



Example picture.

File format and Example parameters

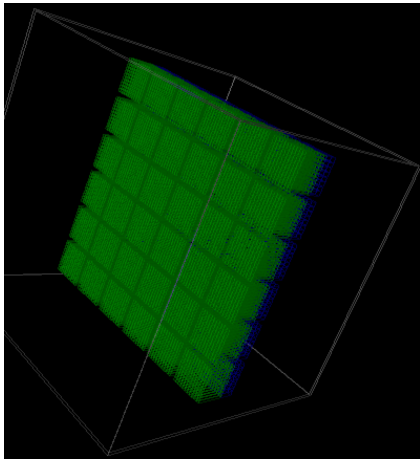
File format	Example file from ./data/Sample/G4MCouch/couch.dat
{N}	3 <== Num. of components
{Mat_1} {Lx_1} {Ly_1} {Lz_1} {PosY_1}	Acrylic 400. 50. 500. 0.0
....	Polyethylene 380. 45. 500. -2.5
{Mat_i} {Lx_i} {Ly_i} {Lz_i} {PosY_i}	G4_WATER 380. 25. 500. -10.0
...	
{Mat_N} {Lx_N} {Ly_N} {Lz_N} {PosY_N}	

* The geometry forms a nested box structure. i.e. i=0 is the envelope geometry.

Parameters

Parameter name	Type	Description
Mat	s	Material name of envelope
N	i	Number of component (Number of lines followed)
Mat_i	s	Material name of i-th component
Lx_i	d	X length of i-th component [mm]
Ly_i	d	Y length of i-th component [mm]
Lz_i	d	Z length of i-th component [mm]
PosY_i	d	Y position offset relative to <u>mother frame</u> [mm]

G4MBoxDetector



Example picture.

File format and Example parameters

File format	Example file from ./data/Sample/G4MBoxDetector/PET.dat
## Sector [comment] {Dx} {Dy} {Dz} {material}	#### Sector 200.0 200.0 200.0 G4_Al
## Module (Replication) [comment] {Nx} {Ny} {Nz} {Dx} {Dy} {Dz} {material}	#### Module (Replication) 1.0mmt Al case 1 1 1 198.0 198.0 198.0 G4_AIR
{xoffset} {yoffset} {zoffset} {xpitch} {ypitch} {zpitch}	0. 0. 0. 0. 0. 0.
## Submodule (Replication) [comment] {Nx} {Ny} {Nz} {Dx} {Dy} {Dz} {material}	#### Submodule (Replication) DetectorUnit 6 6 1 26.2 26.2 35.0 G4_AIR
{xoffset} {yoffset} {zoffset} {xpitch} {ypitch} {zpitch}	-76.5 76.5 -10.00 30.4 -30.4 0.0
## layer [comment] {Nz}	#### Layer (space for cover, BGO, PMT) 3

<code>{Dx} {Dy} {Dz}</code>	<code>26.2 26.2 3.0</code>
<code>{material}</code>	<code>G4_AIR</code>
<code>{zoffset}</code>	<code>-16.0</code>
<code>... Continue for Nz set for each layers.</code>	<code>26.2 26.2 22.0</code>
<code>....</code>	<code>G4_AIR</code>
	<code>-3.5</code>
	<code>26.2 26.2 10.0</code>
	<code>G4_AIR</code>
	<code>12.5</code>
<code>## Tower for Layer 1 [comment]</code>	<code>##### Tower for Layer 1 (POM)</code>
<code>{Nx} {Ny}</code>	<code>1 1</code>
<code>{Dx} {Dy} {Dz}</code>	<code>26.2 26.2 3.0</code>
<code>{material}</code>	<code>POM</code>
<code>{xoffset} {yoffset} {zoffset}</code>	<code>0.0 0.0 0.0</code>
<code>{xpitch} {ypitch}</code>	<code>0.0 0.0</code>
<code>... Continue for Nz set for layers.</code>	<code>##### Tower for Layer 2 (BGO)</code>
<code>....</code>	<code>11 11</code>
	<code>2.2 2.2 22.0</code>
	<code>G4_BGO</code>
	<code>-12.0 12.0 0.0</code>
	<code>2.4 -2.4</code>
	<code>##### Tower for Layer 3 (PMT)</code>
	<code>8 8</code>
	<code>3.275 3.275 10.0</code>
	<code>G4_Al</code>
	<code>-11.4625 11.4625 0.0</code>
	<code>3.275 -3.275</code>

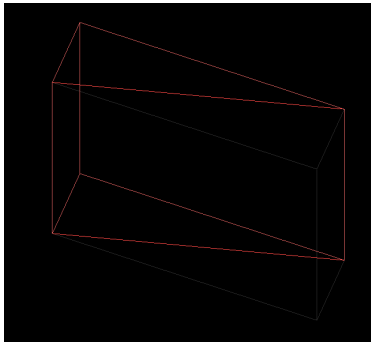
* The geometry forms a nested box structure.

(Sector=Envelope) > (Module) > (Submodule) > (Layer) > (Tower)

Parameters

Parameter name	Type	Description
Sector (it means envelope, for example, the case of the beam module)		
Dx, Dy, Dz	d	X,Y,Z length of envelope box [mm]
material	s	Material name of envelope
Module (it represents a set of detector module inside envelope.)		
Nx, Ny, Nz	i	Number of repeated modules in the sector
Dx, Dy, Dz	d	X,Y,Z length of a module box. [mm]
material	s	Material name
xoffset, yoffset, zoffset	d	X, Y, Z offset position of module inside the sector[mm]
xpitch, ypitch, zpitch	d	X, Y, Z pitch of module inside the sector[mm]
Submodule (it represents a kind of detector unit inside the module.)		
Nx, Ny, Nz	i	Number of repeated submodules inside the module
Dx, Dy, Dz	d	X,Y,Z length of submodule box. [mm]
material	s	Material name
xoffset, yoffset, zoffset	d	X, Y, Z offset position of submodule inside the module [mm]
xpitch, ypitch, zpitch	d	X, Y, Z pitch of submodule inside the module[mm]
Layer (it segments the submodule into layers)		
Nz	i	Number of layers in submodule. The number of datasets should be equal to this number.
Dx, Dy, Dz	d	X,Y,Z length of a layer [mm]
material	s	Material name
zoffset	d	Offset of the layer in the submodule.
Tower (This will be crystals, PMTs etc.)		
The following datasets should be prepared for each layers defined in the “Layer” Nz.		
Nx, Ny, Nz	i	Number of replicated towers in side a layer.
Dx, Dy, Dz	d	X,Y,Z length of a tower [mm]
material	s	Material name
xoffset, yoffset, zoffset	d	X, Y, Z offset position of tower inside the layer[mm]
xpitch, ypitch, zpitch	d	X, Y, Z pitch of tower inside the layer[mm]

G4MWedge



Example picture.

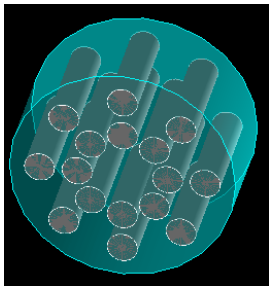
File format and Example parameters

File format	Example file from ./data/Sample/G4MBox/degrader.dat
{DX} {DY}	80. 80.
{Material}	G4_Al
{Angle}	30.
{DIR}	1

Parameters

Parameter name	Type	Description
DX	d	Length in X direction
DY	d	Length in Y direction
Material	s	Material name of wedge
Angle	d	Angle of wedge in degree
DIR	i	(+1 or -1) +1: Angle is +X side. -1: -X side.

G4MAnatomicalPhantom



Example picture.

File format and Example parameters

File format	Example file from ./data/Sample/G4MAnatomicalPhantom/150z150.dat
{ID}	001
{Comments}	eRadius:150mm(drx = dry)
{EnvMat} {Dx}{Dy}{Lz}{Shape}	H_20 150. 150. 150. TUBE
{Nnode}	16
{Mat_i}{Rpos_i}{Ang_i}{dr_i}{On_i}	lungInhale 60. 0. 20. 1
... Repeated for {Nnode}	Muscle 60. 45. 20. 1
	adiposeTissue 60. 90. 20. 1
	Muscle 60. 135. 20. 1
	...snipped...

Parameters

Parameter name	Type	Description
ID	i	ID number (not used.)
Comments	s	Comments (not used.)
EnvMat	s	Material of phantom (i.e. Envelope)
Dx, Dy, Lz	d	Water phantom size in x, y, and z. (mm) Only Lz is given in full length. Dx and Dy are given in half length.
Shape	s	TUBE or BOX. Shape of the phantom.
Nnode	i	Number of node inside the phantom.

Mat_i	s	Material of i-th node.
Rpos_i	d	Distance of i-th node from the center of phantom. (mm)
Ang_i	d	phi angle of i-th node (degree)
dr_i	d	Size of radius of i-th node (mm). (Length is set to be same as envelope.)
On_i	i	(1 or 0) On/Off flag for this node. If 0, this node is skipped in geometry construction.

(BUGS)

- Parameters cannot be changed by /G4M/Module/typeid. Only initial parameter-set in beam module registration is applicable.