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LION Beam Analysis with Calvin's Beam Data: Progress I

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What Progress ?

Very little on my part !

I have discussed with Calvin the three options I have with getting external voxel data into ZEMAX other than by hand (as done previously with Maria's):

- The ZPL Macro language

- The ZOS-API in the .NET environment, using C# etc.,

- ZOS-API can also be used in a .COM environment, using C++ etc.,

- Create a bespoke DLL (64-bit Windows compatible)

I am proposing to start with the ZPL macro language;

I have discussed with Calvin the set of parameters I will need per voxel, but until I can demonstrate some simple example generated by myself, he will hold off from producing anything specific.

Some ZPL Commands for NSC Ray Tracing

INSERTOBJECT surf, object

SETNSCPOSITION surface, object, code, value

SETNSCPROPERTY surface, object, code, face, value

SAVEDETECTOR surf, object, filename

An example of a simple ZPL Macro

The following macro will print out the image surface intercept coordinates of the chief ray at every defined field angle.

The various PRINT commands output the chief ray coordinates on the image surface to the screen.

```
nfield = NFLD()
maxfield = MAXF()
n = NSUR()
FOR i, 1 , nfield, 1
  hx = FLDX(i)/maxfield
  hy = FLDY(i)/maxfield
  PRINT "Field number ", i
  RAYTRACE hx,hy,0,0,PWAV()
  PRINT "X-field angle : ",FLDX(i)," Y-
  field angle : ", FLDY(i)
  PRINT "X-chief ray : ",RAYX(n), " Y-
  chief ray : ", RAYY(n)
  PRINT
NEXT
PRINT "All Done!"
```

What next?

Demonstrate that I can read in some simple data (x,y,z of voxel, Power, Number of rays to trace) from a text file;

Using this data create sources at the voxel positions with the correct properties from the file;

Write out the data from the detector to a file and check against what is shown interactively with ZEMAX;

Go back to Calvin!