

Automatic Mesh Size Generation for PENMSHXP

This new `-maxmesh` option will automatically assign the number of FM per CM to make the mesh size be less than or equal to `-maxmesh`

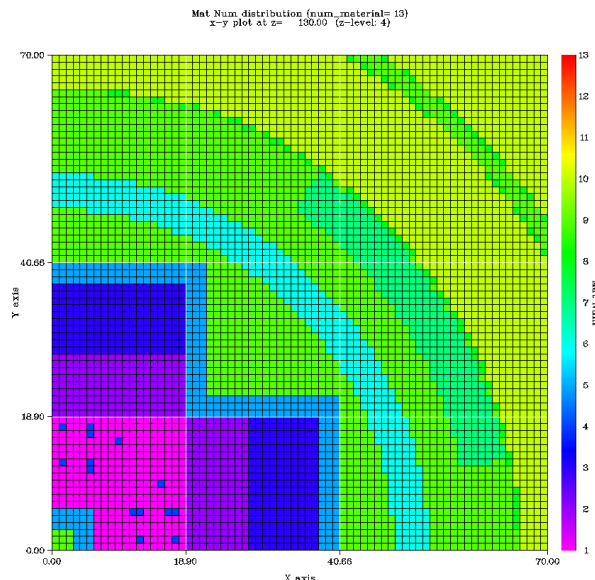
This is best illustrated by example. See the z-level input file with the number of fine/coarse mesh information (venus1.inp). Note that all the CMs have only 1 FM assigned to them. The purpose of this is shown later.

```
1 /ncx, ncy, maxfinz (maxfinz < 0, add z-fine per cm below y-fine)
2 3,3,1
3 / x-fine mesh per cm (# seq along cm rows of x)
4 1,1,1
5 1,1,1
6 1,1,1
7 / y-fine mesh per cm (# seq ... x)
8 1,1,1
9 1,1,1
10 1,1,1
```

Now we use the option:

`Penmshxp -maxmesh 1.0`

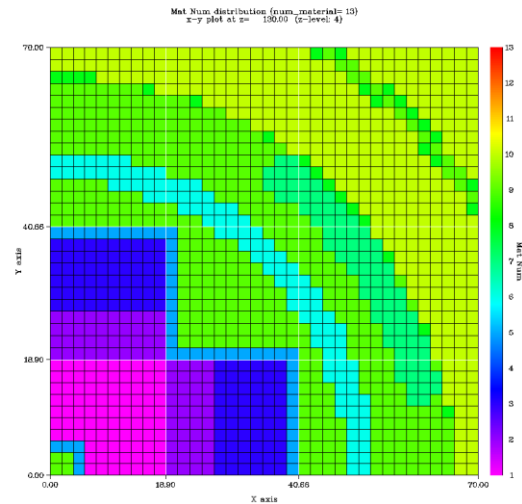
The result is below: each cell is at most 1.0 cm in size. It sets `nmesh=ceiling(CM_size/desired_size)`.



This makes it very easy to change the mesh size without calculating the required number of FM in each CM and editing all of those numbers in every z level file.

Say we want to coarsen the mesh:

`Penmshxp -maxmesh 2.0`

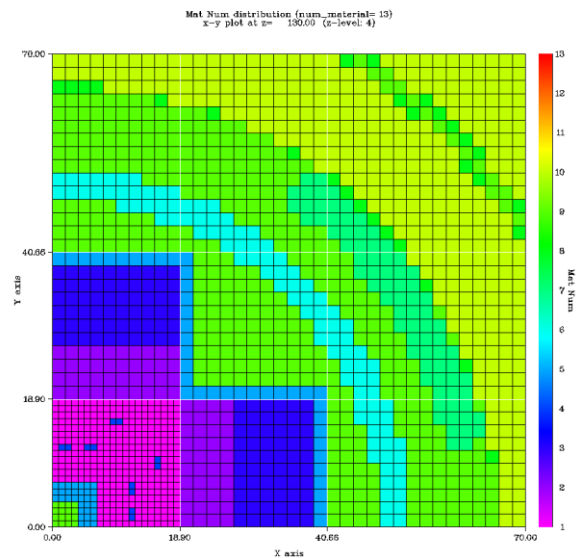


We also allow for non-uniform size meshing in the following way:

```
1 /ncx, ncy, maxfinz (maxfinz < 0, add z-fine per cm below y-fine)
2 3,3,1
3 / x-fine mesh per cm (# seq along cm rows of x)
4 2,1,1
5 1,1,1
6 1,1,1
7 / y-fine mesh per cm (# seq ... x)
8 2,1,1
9 1,1,1
10 1,1,1
```

The x and y mesh of CM 1 has been assigned the value 2. These values, instead of being the number of FM, is used as a multiplier for the number of FM. If we use the same command now:

Penmshxp –maxmesh 2.0



We get double the x and y mesh density for CM 1.