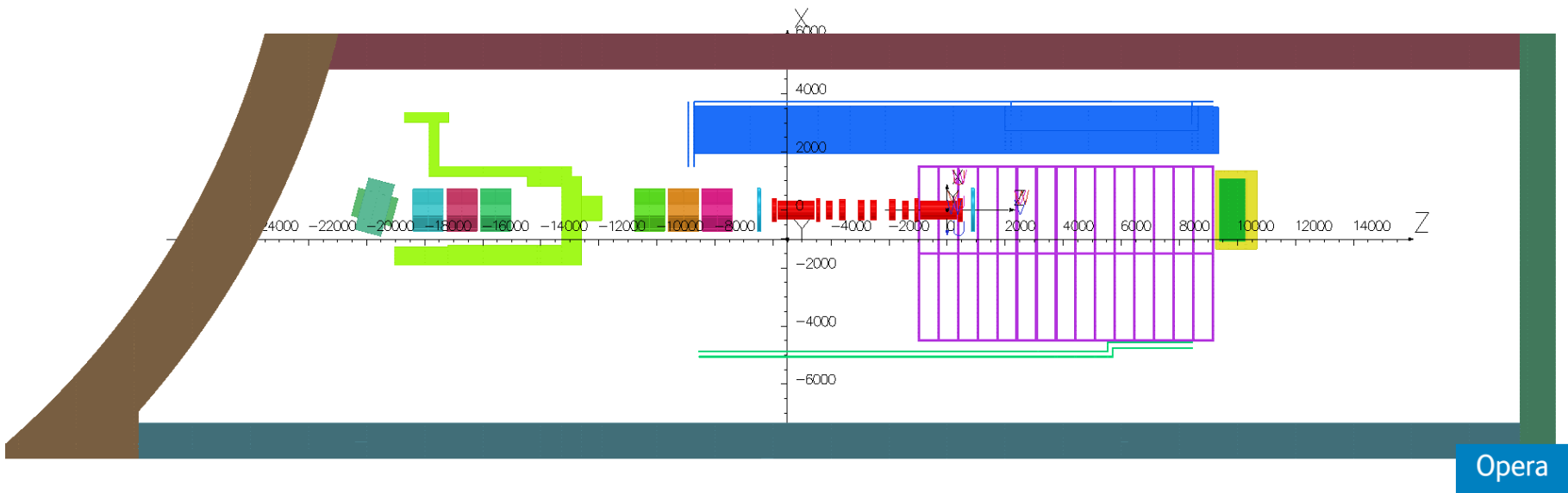# Modelling Update – 19/9/12

Overview

- Added Quads, Dipole D2, DSA iron

- All meshed and currently solving.

-

- Repository created:

  https://launchpad.net/micehalloperaproject

- Geometry checks undertaken with Jason.

Upstream I have added Quads (done last week but had to check the meshing), D2 and the DSA area.
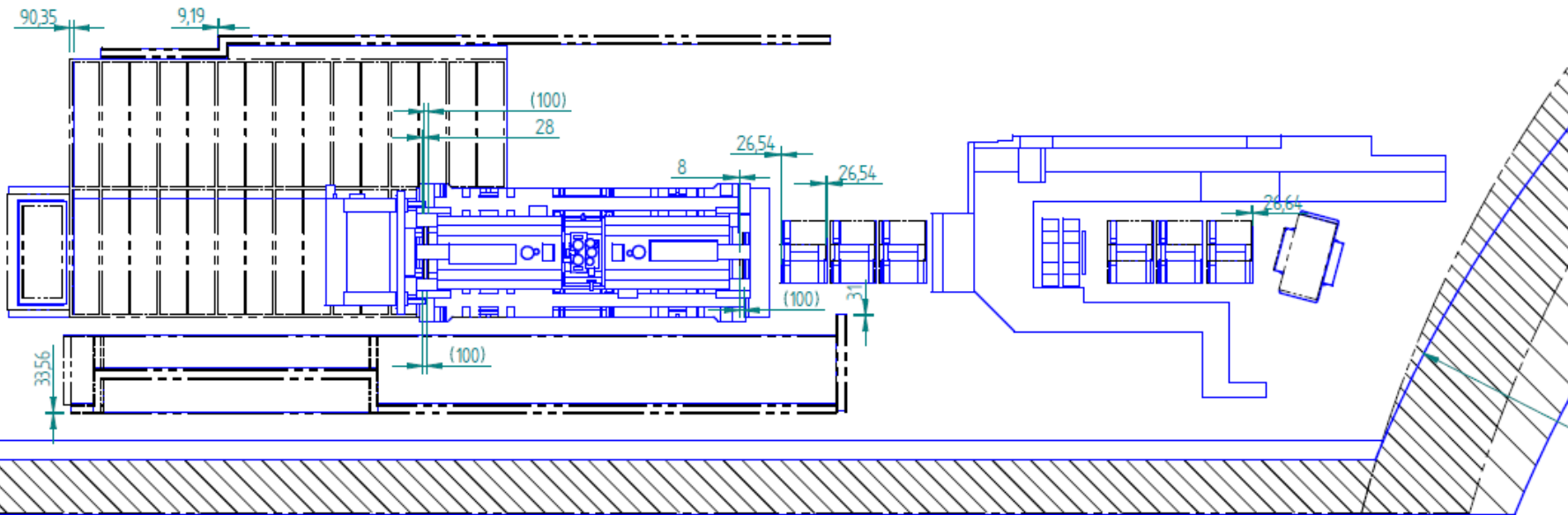
I presume the protrusion from the DSA is the beam-stop.

If so then it is currently fixed into one position raised – do we want the option to have it is a raised/lowered position?

DSA is currently meshed at very low resolution, necessary because its 'volume' incorporates the quads and D2. It would take some effort to improve mesh resolution in this area.
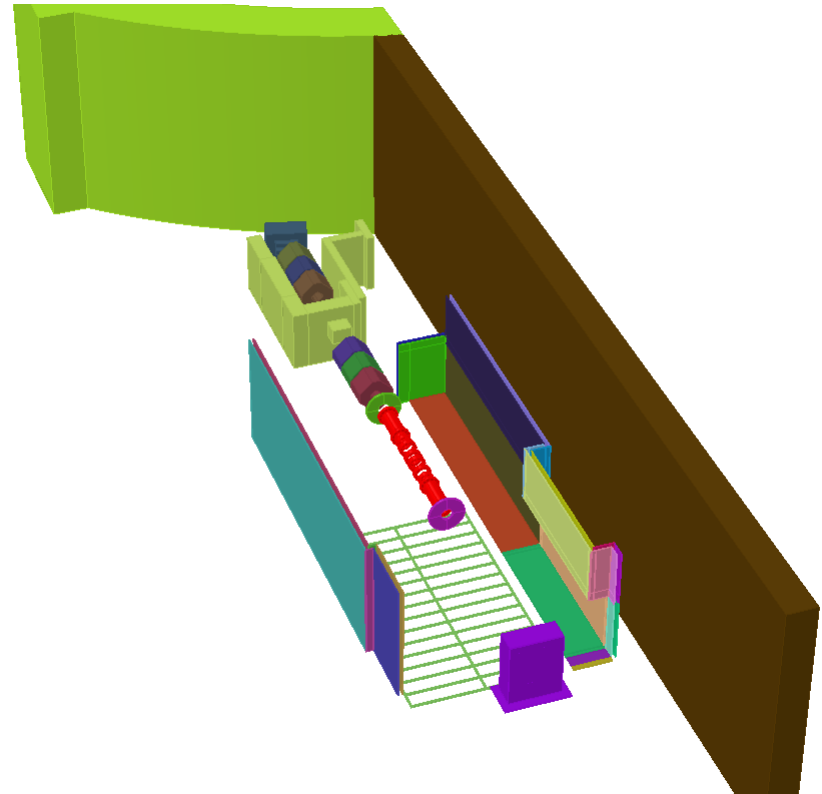
Geometry Checks

SECTION A-A

Jason overlaid OPERA geometry onto his model – generally good agreement (Blue is Jason's model – black is OPERA)

East Wall in wrong location – awaiting further info to correct this
Most other discrepancies are less than meshing resolution so are not of concern
Slightly larger discrepancy on the floor web but still not of huge concern

Floor Web
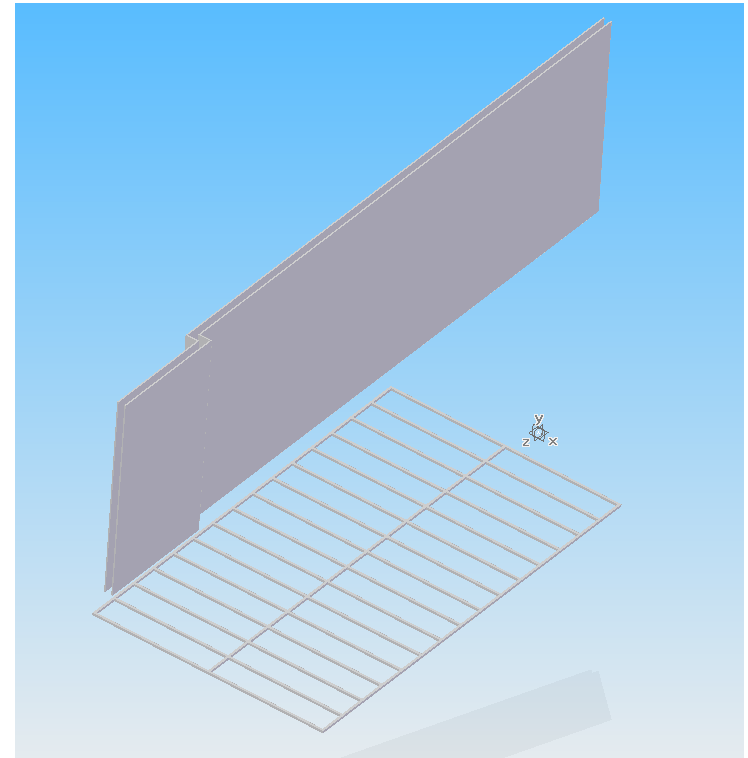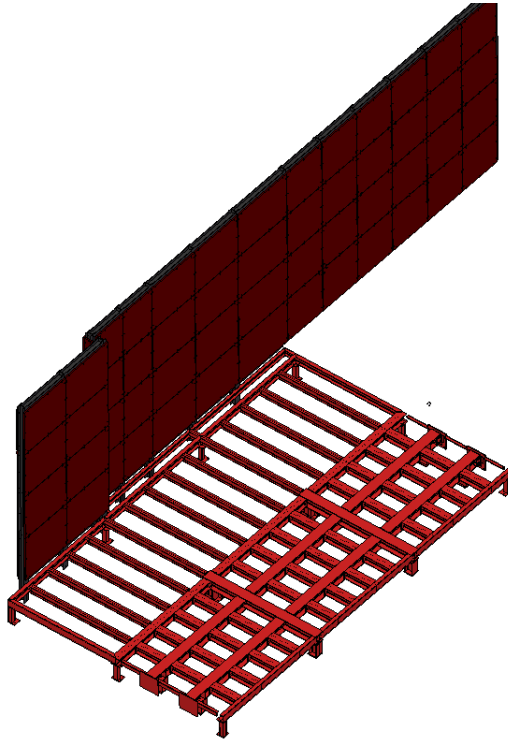
LHS – Jason CAD, RHS OPERA model. Looks quite different but beams on LHS are not solid where beams on OPERA model are. Probably not as different as it looks.

Waiting for advice on whether our web needs some more work but I suspect it is a reasonable approximation. Need to be careful not to overcomplicate the model.

Priority Items to Add

In order to use the model to study the field at the West Wall I need to add

1) Buried Magnets under Floor near beam dump
2) EMR

In both cases I am awaiting additional info before I can put these into the model.

Of course there is other material to be added if we wish to look elsewhere in the hall

Linac Shield Wall
Buried Magnets Behind Beam Dump
False Floor Structure
DSA Block House
North Mezz
South Mezz Stairs
Transformer Wall
PPS Cages
Trench Flooring
False Floor Behind North Shield Wall

This list alone, taken from Luke Fry's spread-sheet, represents a significant amount of work, particularly as the meshing associated with some of these items is likely to start clashing with existing material in the model.

Which leads to the question....

Using the model

At what stage does the model become useful?

- I can continue adding material from the lists that are provided for some time but I'm mindful that we don't have the luxury of months to refine the model so I suspect some compromises will need to be made - the problem is knowing how to make the right compromises…

- There are also multiple problems to solve, and each one could take a significant amount of effort, so we need to parallelise our approach to this. At the moment the approach is 'dual core' (i.e. Mike/myself running models) but it's not obvious how a transition to a 'multi-core' modelling team can be made to work.

Ken has asked me to look at these issues more seriously. My thoughts on this so far are:

Requirements:

1) A list of the specific problems that we need to solve with the magnetic models.

2) A list of the resources that we have:

       Existing Code and its capability
       Licences / Available computing
       Manpower / Expertise

3) A list of resources that we need:

       More code?
       More manpower?

4) A plan to match 1) with 2) and 3) on a suitable timescale.

Perhaps a meeting between the modellers at DL, RL and myself in the near future would help establish how to tackle these issues? Is a workshop at next CM to far away?