KURRI updates

S Machida
ASTeC/STFC Rutherford Appleton Laboratory
30 May 2014

To-do list

Model or calculate the capacitance of the double plate monitor in order to calibrate the vertical position measurement. [Uesugi?]

How does the closed orbit distortion look in the injection region of the ring (with different corrector settings)? [Malek]

Injection line modeling in ZGOUB [Malek]

Investigate dispersion matching of D, D' from the injection line. (ie. the dispersion measured in the ring is about 0.6 at the centre of the F magnets. The foil is located almost at the centre of an F magnet so it makes sense to 'aim' to get the injection line to create a dispersion which matches this at the foil) [Malek]

Tosca modeling to determine the relationship between the magnet current and field strengths. [Uesugi]

Science & Technology
Facilities Council

Vertical BPM calibration (Ishi-san)

bunch monitor capacitance

530

120

13

35

8

203 diameter
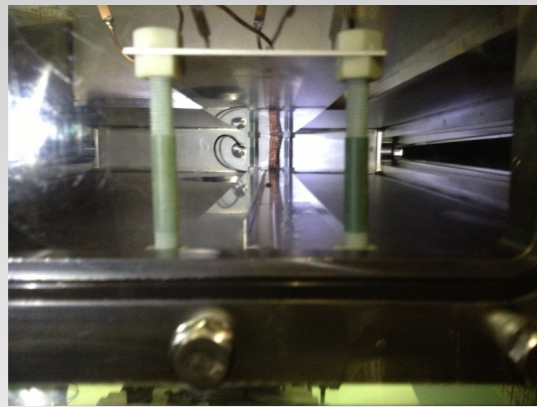
plate geometry
length 1000 mm
width 100 mm
thickness 2 mm
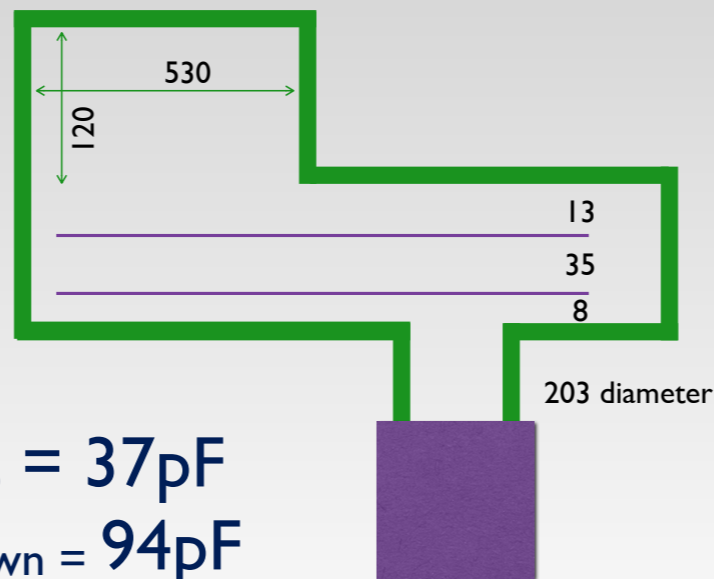
$C_{up} = 37pF$

$C_{down} = 94pF$

$C_{up} / C_{down} = 0.4$

It is still not clear to me how the physical position could be obtained.

Science & Technology
Facilities Council
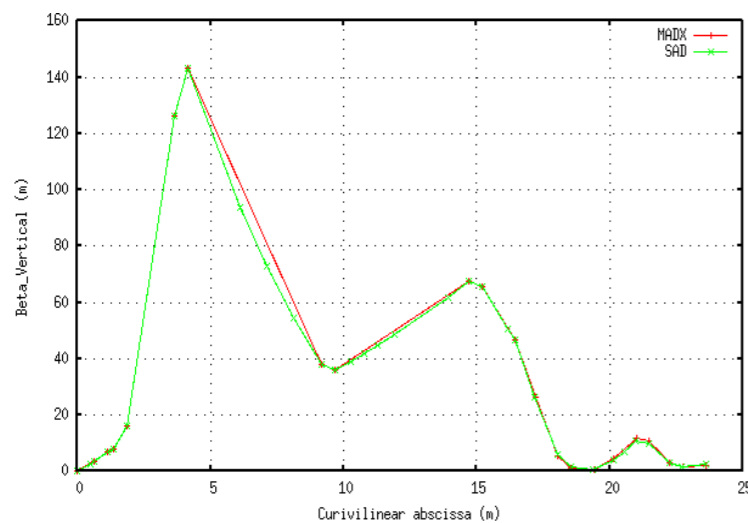
Modelling of ring orbit (Ishi and Malek)
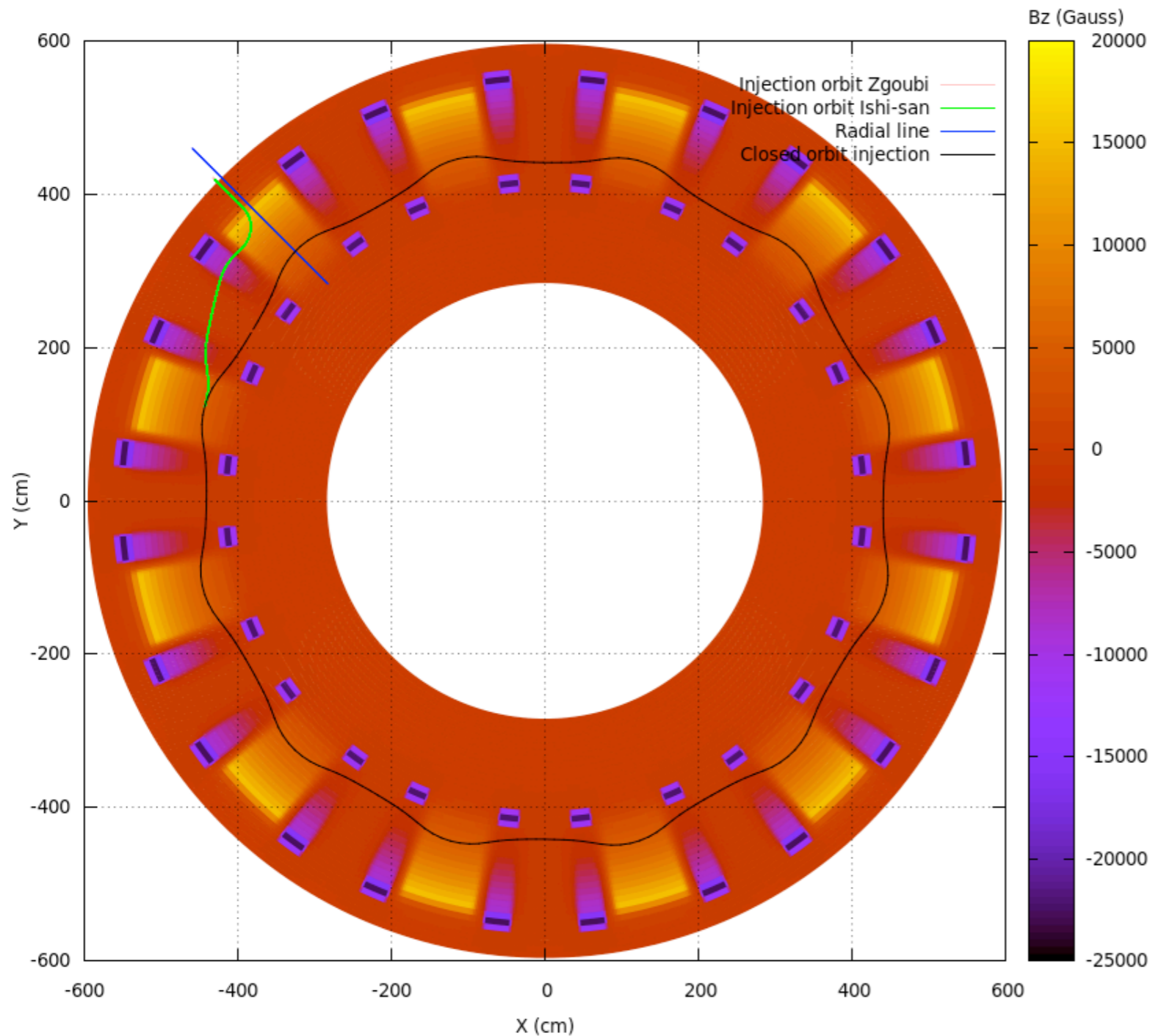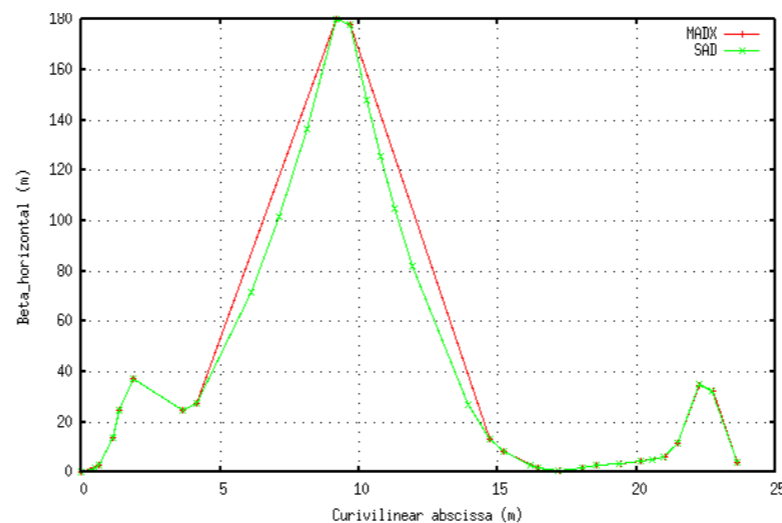

No study of COD yet.

Injection line modelling (Malek)

Injection line: MADX vs SAD

- 8 Quadrupoles, 2 Bending magnets, 2 horizontal steering magnets, 2 vertical steering magnets.

Vertical betatron function


Horizontal betatron function

9

Malek compared it with MADX and SAD. Dispersion function was not shown in the last meeting.

TOSCA modelling of main magnets (Uesugi)

Field reduction (summary)

Current factor	Power supply I_F / I_D	File name	Average field dB_F / dB_D
-5%	773.30 / 1140	20140502_773_1140.table	-2.86% / -2.75%
-2%	797.72 / 1080	20140503_797_1080.table	-1.10% / -0.81%
0%	814.00 / 1012	20140502_814_1012.table	0% / 0%
+2%	830.28 / 940	20140504_830_0940.table	+0.87% / +0.80%
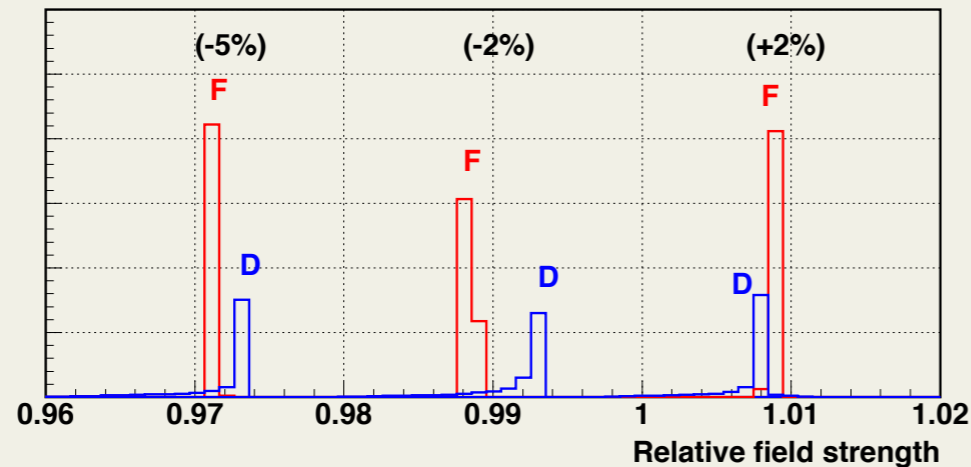
May have more agreement if we look at different measures.

Dispersion matching strategy

Establish the way to change the dispersion function and its derivative in the injection line.

Use the same technique to measure dispersion function of injection line at the foil.

Science & Technology
Facilities Council