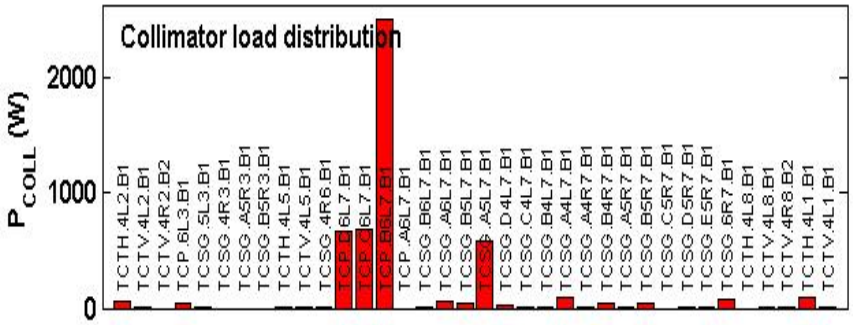
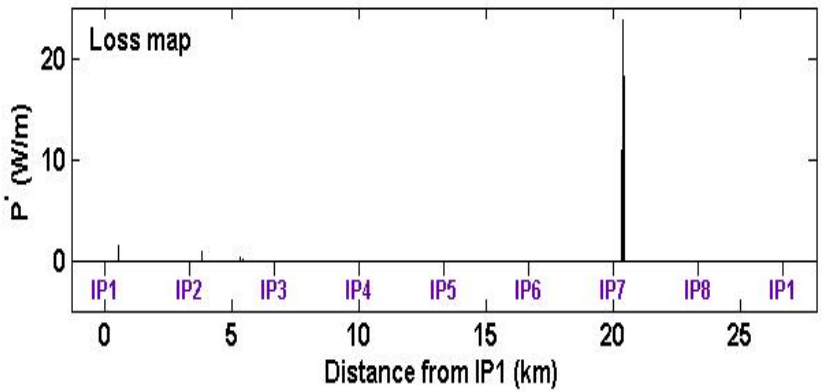
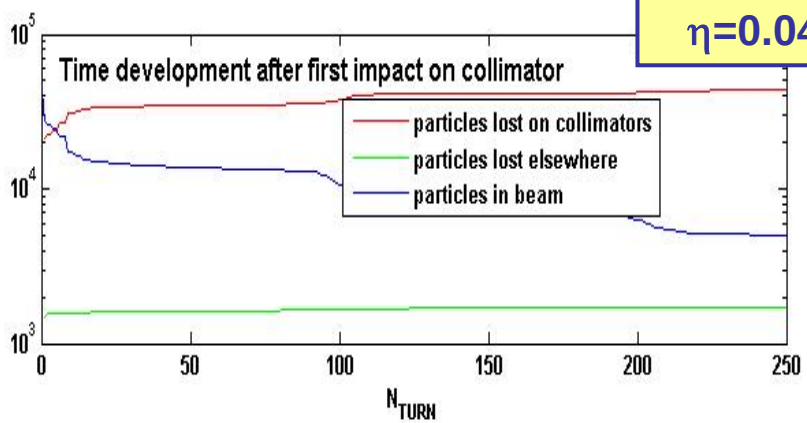
# Latest on LHC heavy ion collimation

- Loss maps for several scenarios
- Suggested locations for BLMs (IR7)
- What next

# Beam1 @ nominal collision

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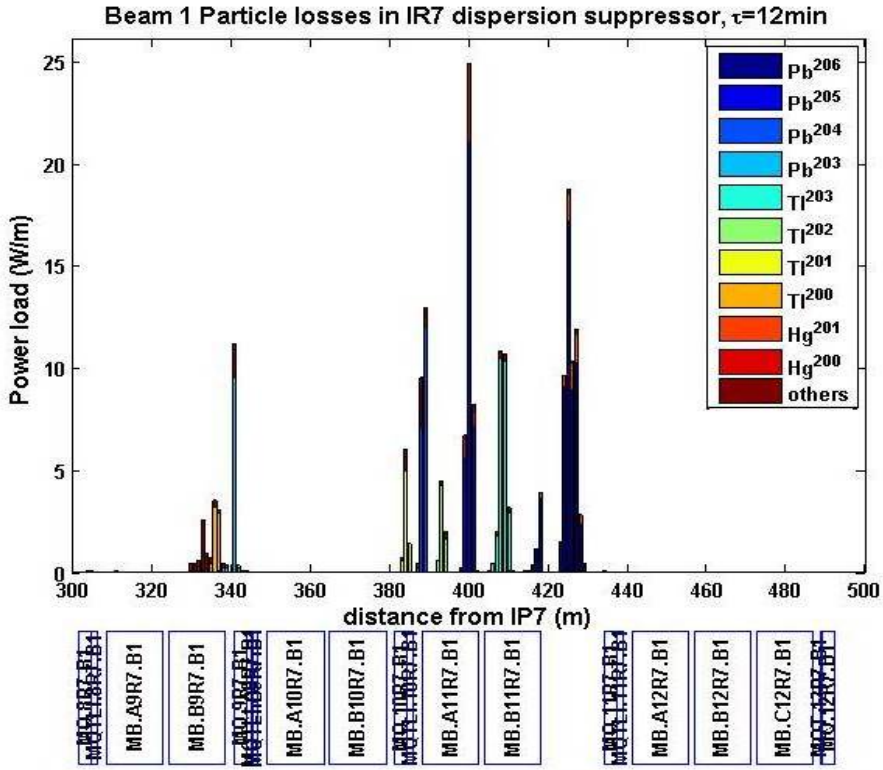
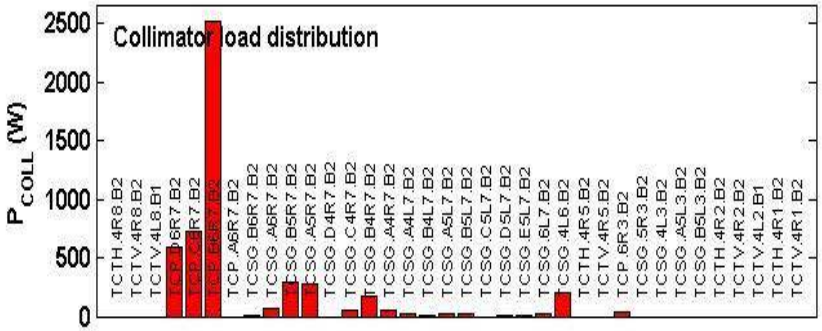
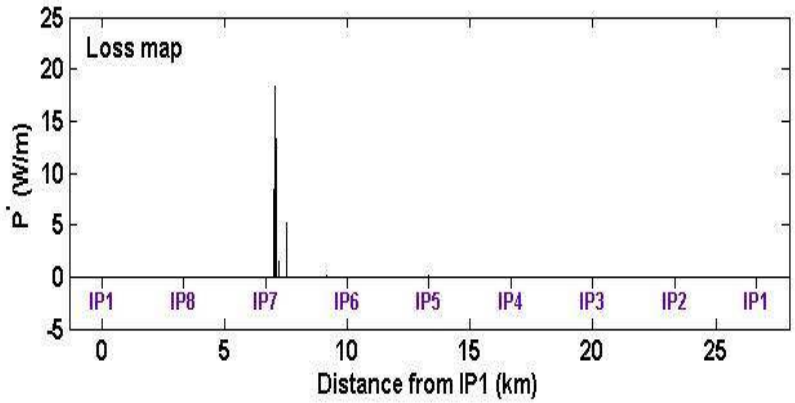


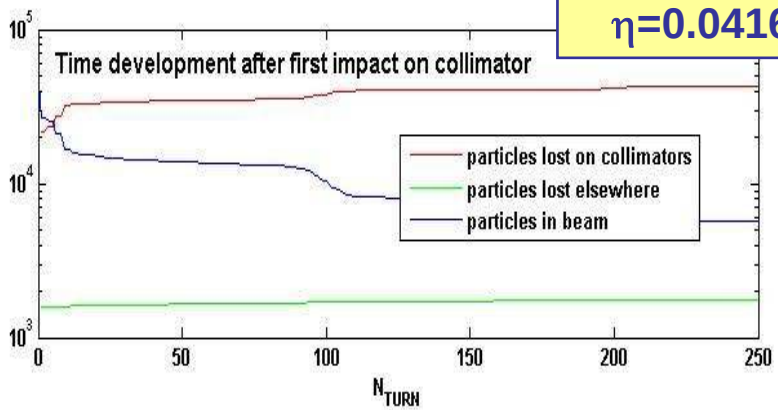

Losses confined to IR7 dispersion suppressor, cells 9 & 11

Few small losses in IR2 (mainly blocked by tertiaries)

# Beam2 @ nominal collision

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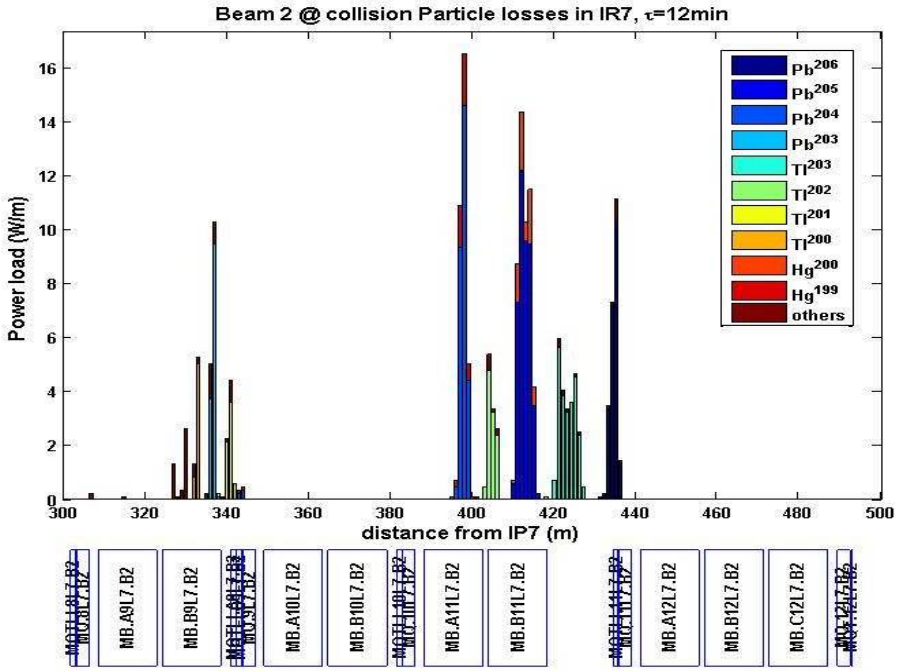
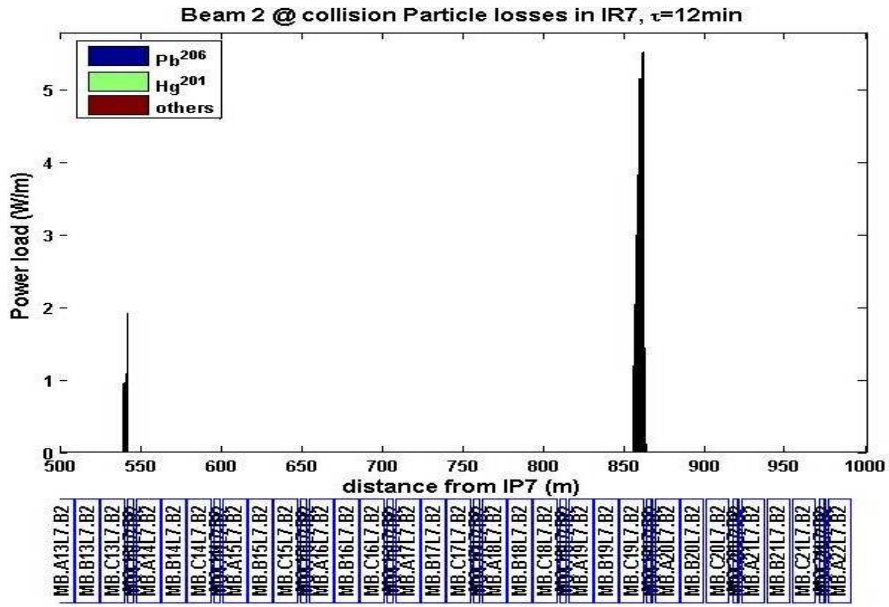
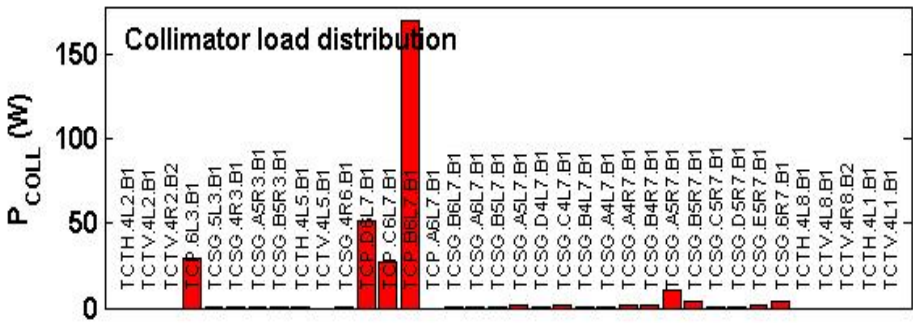
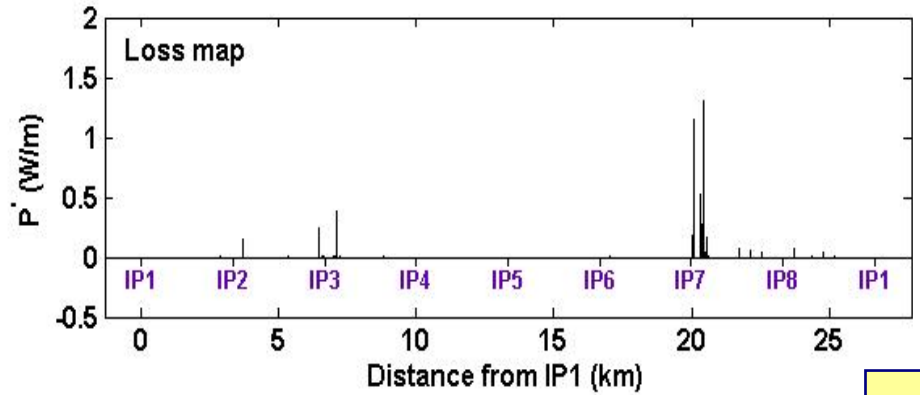
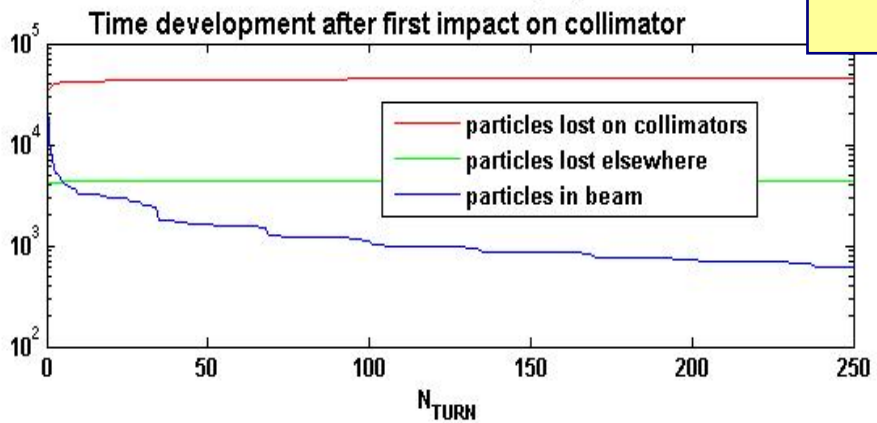


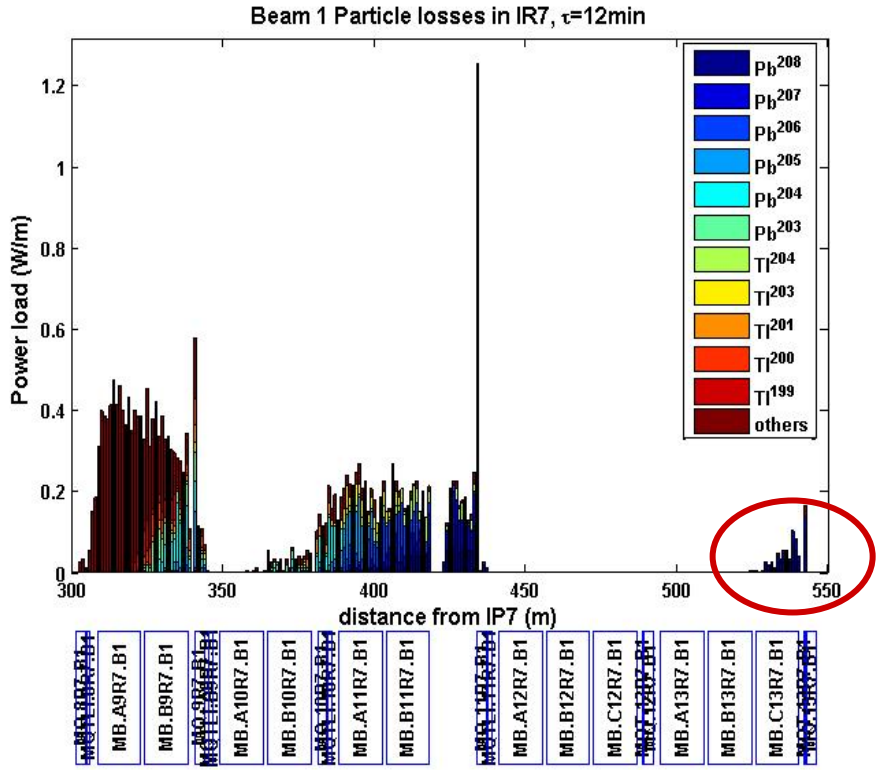



# Beam1 @ injection



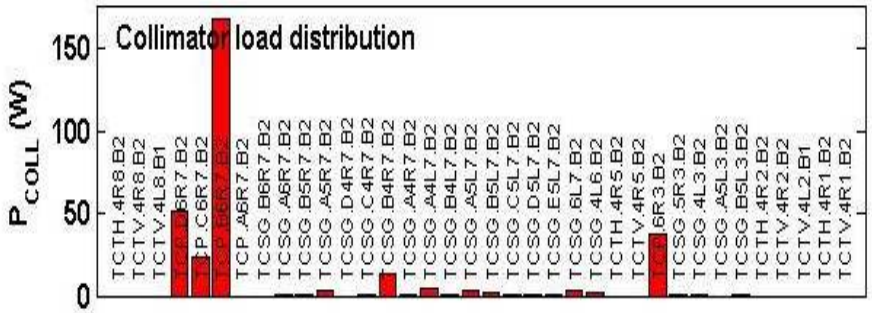



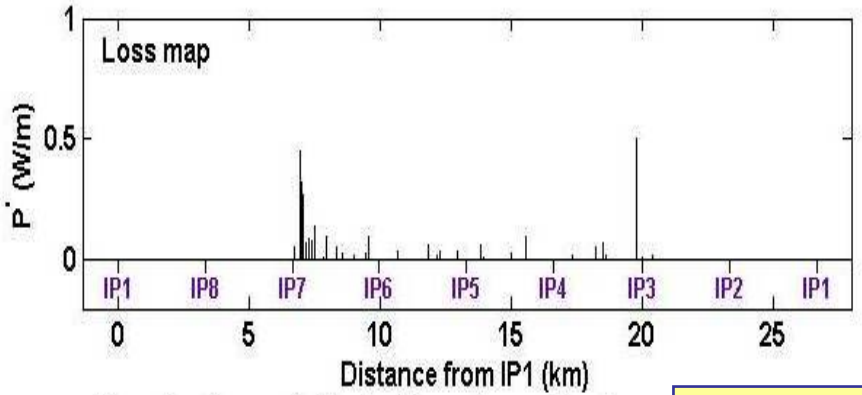



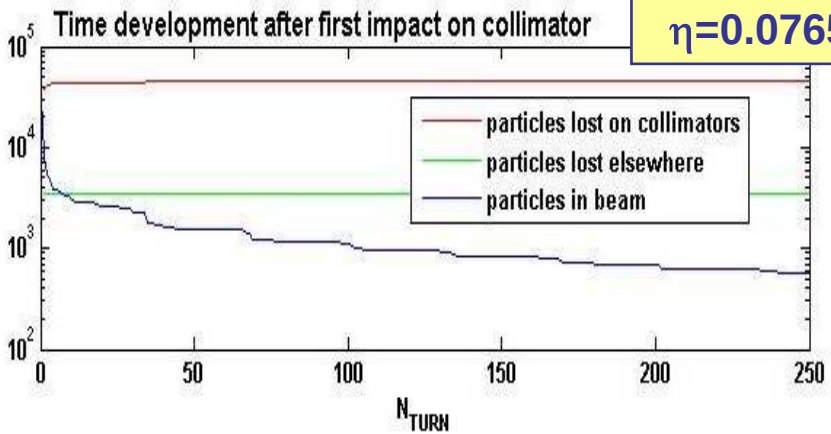




$\eta$=0.0964

# Beam 2 @ injection

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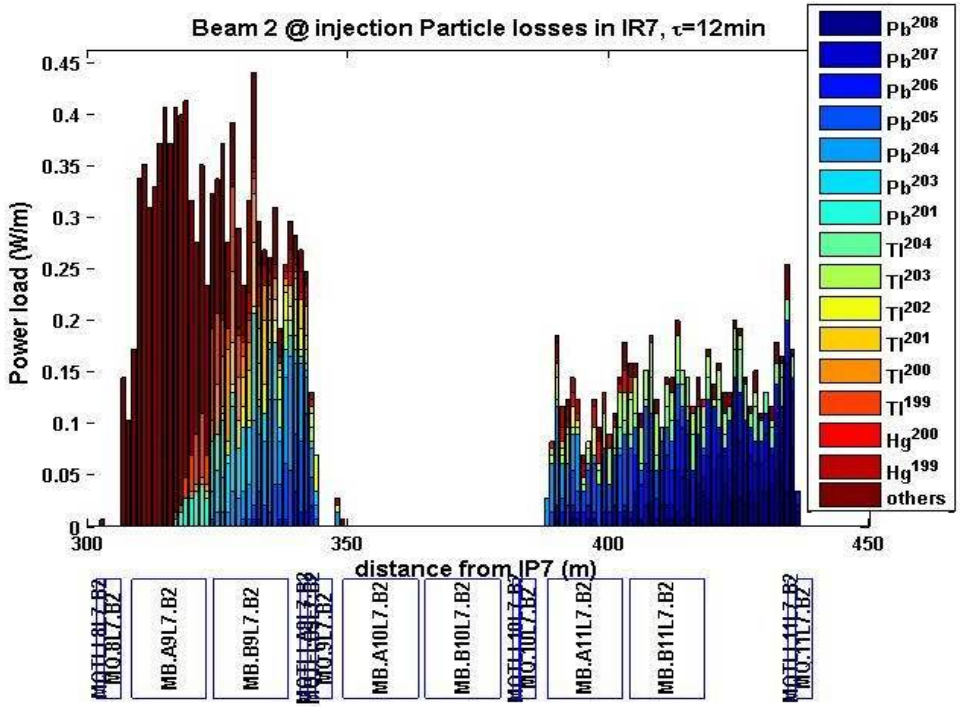
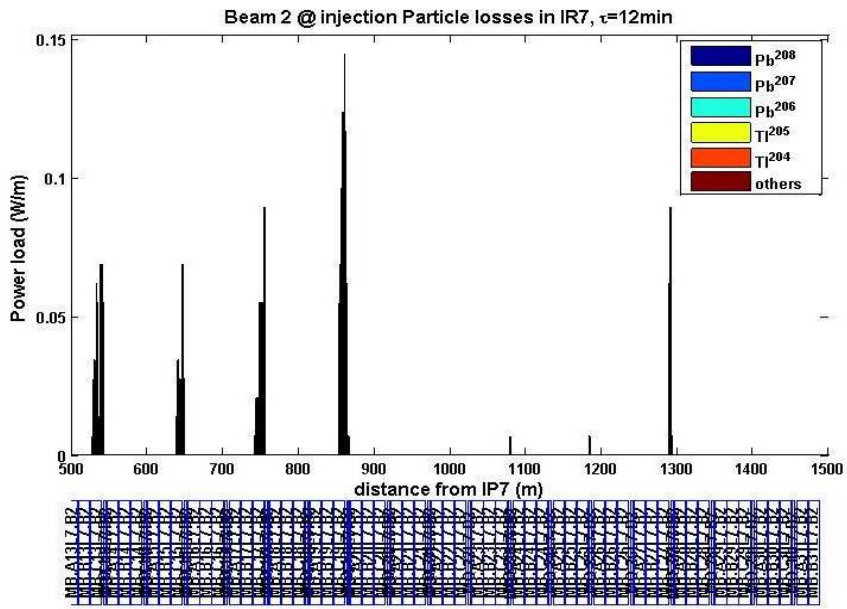


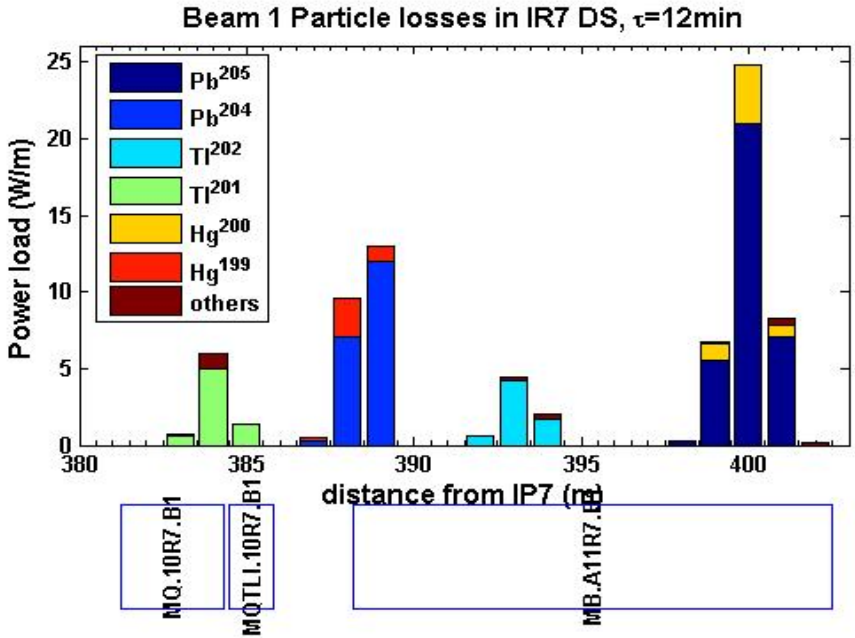
# Status of LHC heavy ion collimation

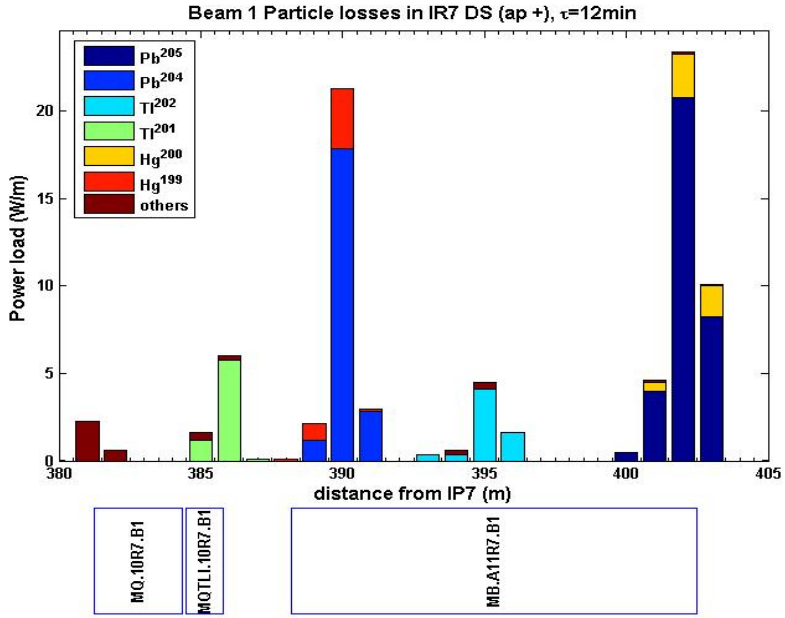
- Loss maps for several scenarios
- Suggested locations for BLMs (IR7)
- What next

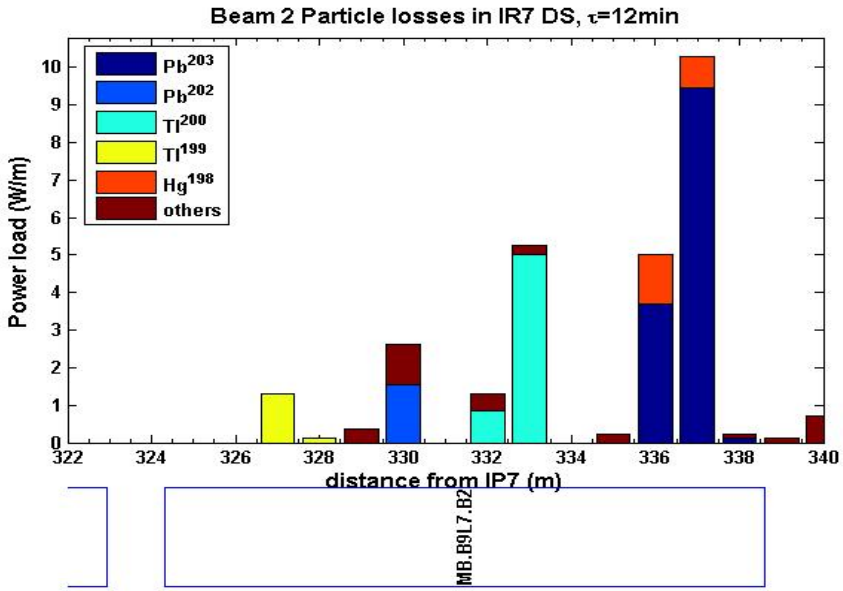
# Aperture sensitivity :

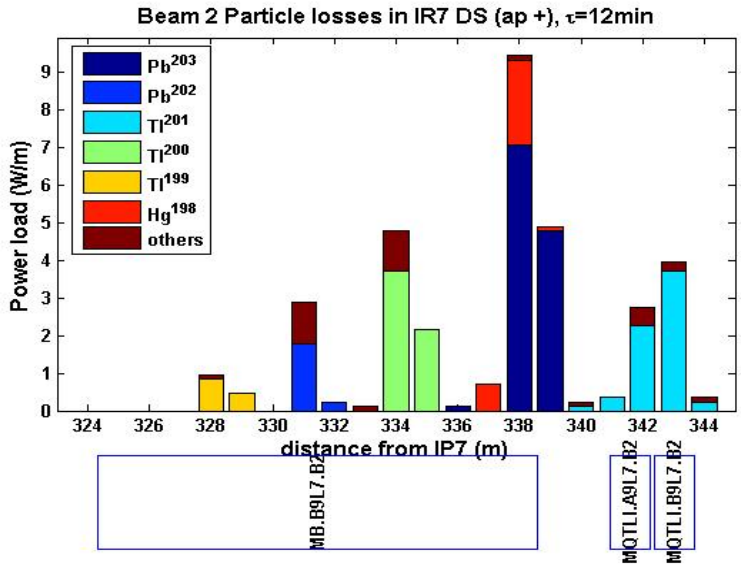
nominal

+1 mm



# BLMs coverage:

## Philosophy :

Adding 1mm to aperture (all elements) causes a shift in the beam loss peaks by up to 2m

BLMs coverage of IR7:
3 patches available in cells 8,9,11 (dipoles) X 8 channels (max) X 2 BLMs

2 channels available on quad patches (regions 8,9,10,11,13)

Need partial coverage of cell 9 and 13, full coverage of cell 11

## Numbers:

BLM active length = 40 cm

Dipole length = 14.3 m (x2)

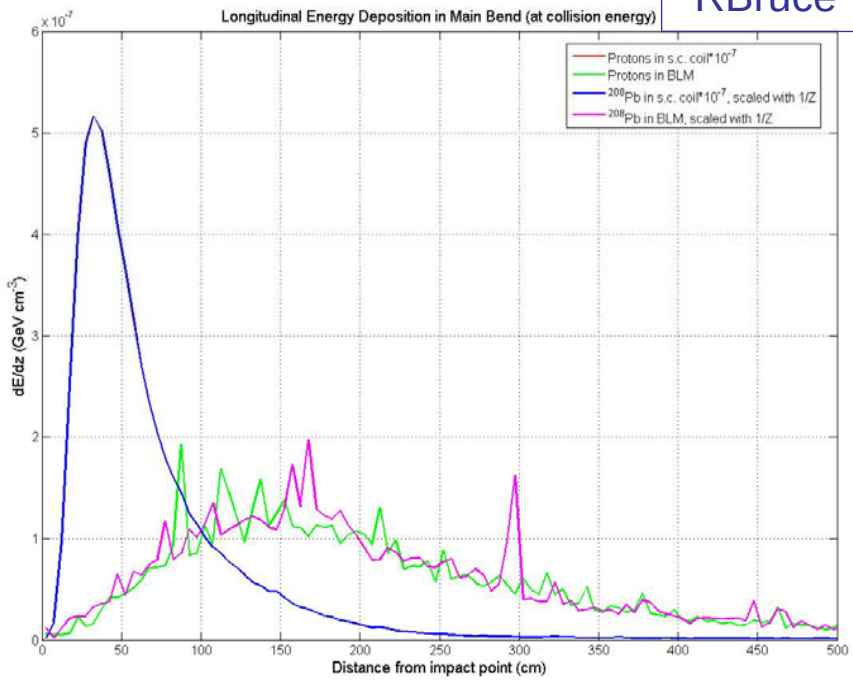
Long. Spread of energy deposition=

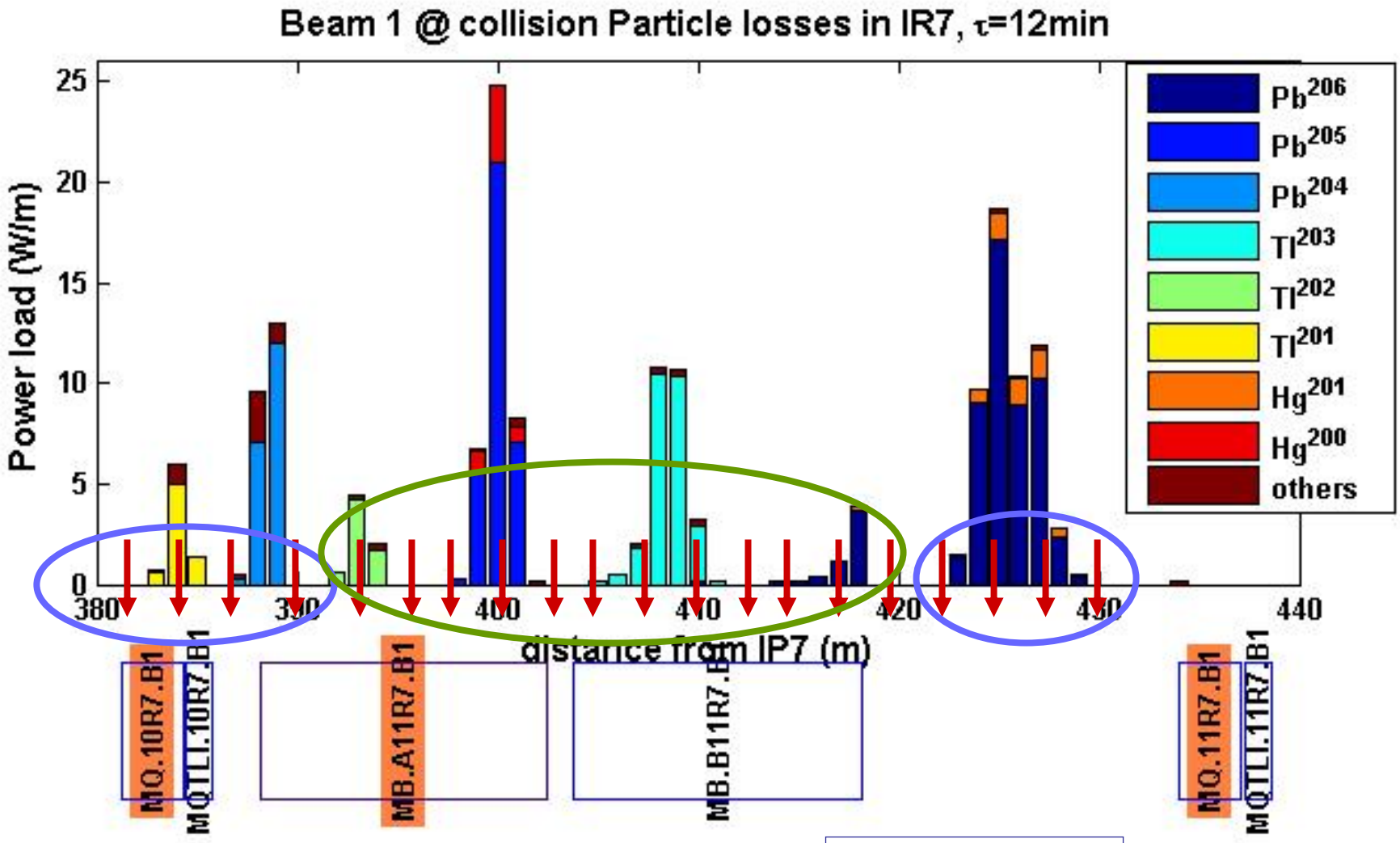
2.5 m FWHM

peak @ 1.5 m from impact

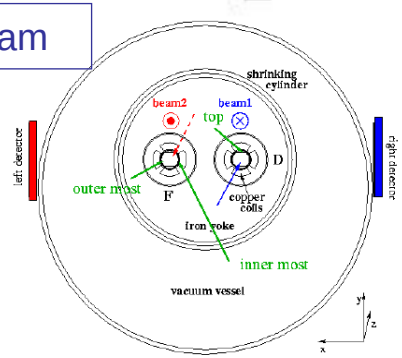
For coil deposition peak @ 30cm from impact point

RBruce






B. Dehning's team




-2.5 m spacing

-Transverse position: inside (left) for beam2, outside (right) for beam1

# What next ?

***High priority:***

#1 : Produce list of locations for BLM installation in IR7/IR3

# 2 : Study sensitivity to orbit oscillations using same perturbation model as used by proton collimation group (GRD's talk at last Chamonix)

***Suggestions from CWG meeting:***

Study loss distributions (uniform loss assumption *vs* losses concentrated on a single collimator jaw). Role of skew collimators?

Sample MAD optics every 10cm to get more precise loss locations.

Include a $\Delta p/p$ in initial distribution.

Study collimation inefficiency for thinner collimators.

Specific issues:

- Code benchmarking for protons (ICOSIM/Sixtrack, ICOSIM/SPS data)
- Improve physical model of particle/collimator interactions