



LER Spin Rotator Status October 2009

Ring Optics Team

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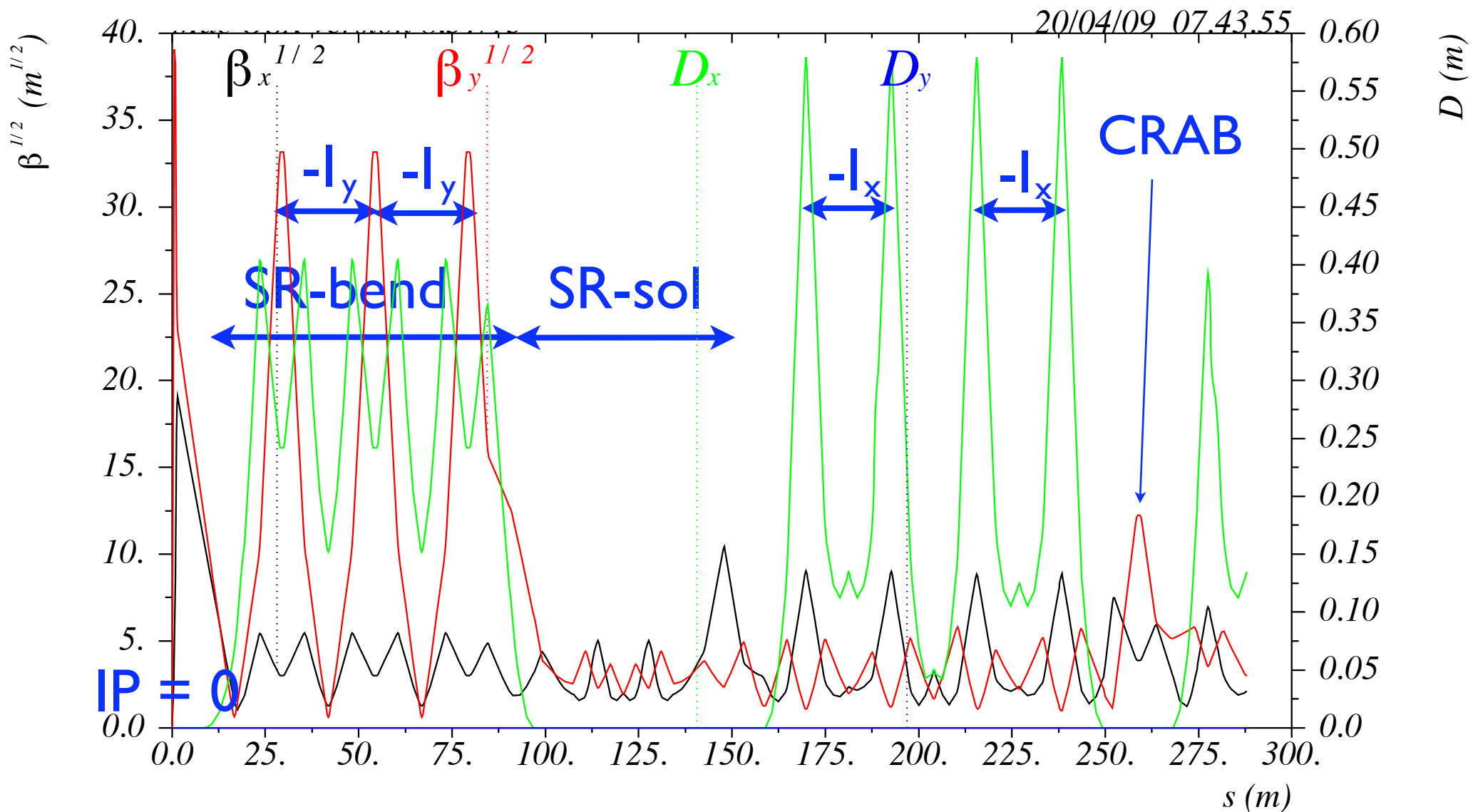
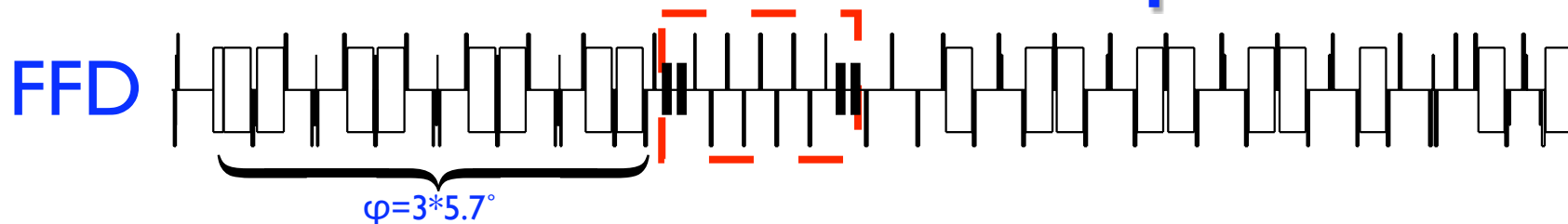
Outline

- Review.
- Status of the SR.

Scope of Work LER Spin Rotator

Introduce spin rotator on both sides of IP in the LER to provide longitudinal polarized electrons at IP and thereby maintaining the chromatic characteristic of the original design necessary for the crab waist scheme, the band width and dynamic aperture.

HER IR with SR Linear Optics VI.04.010

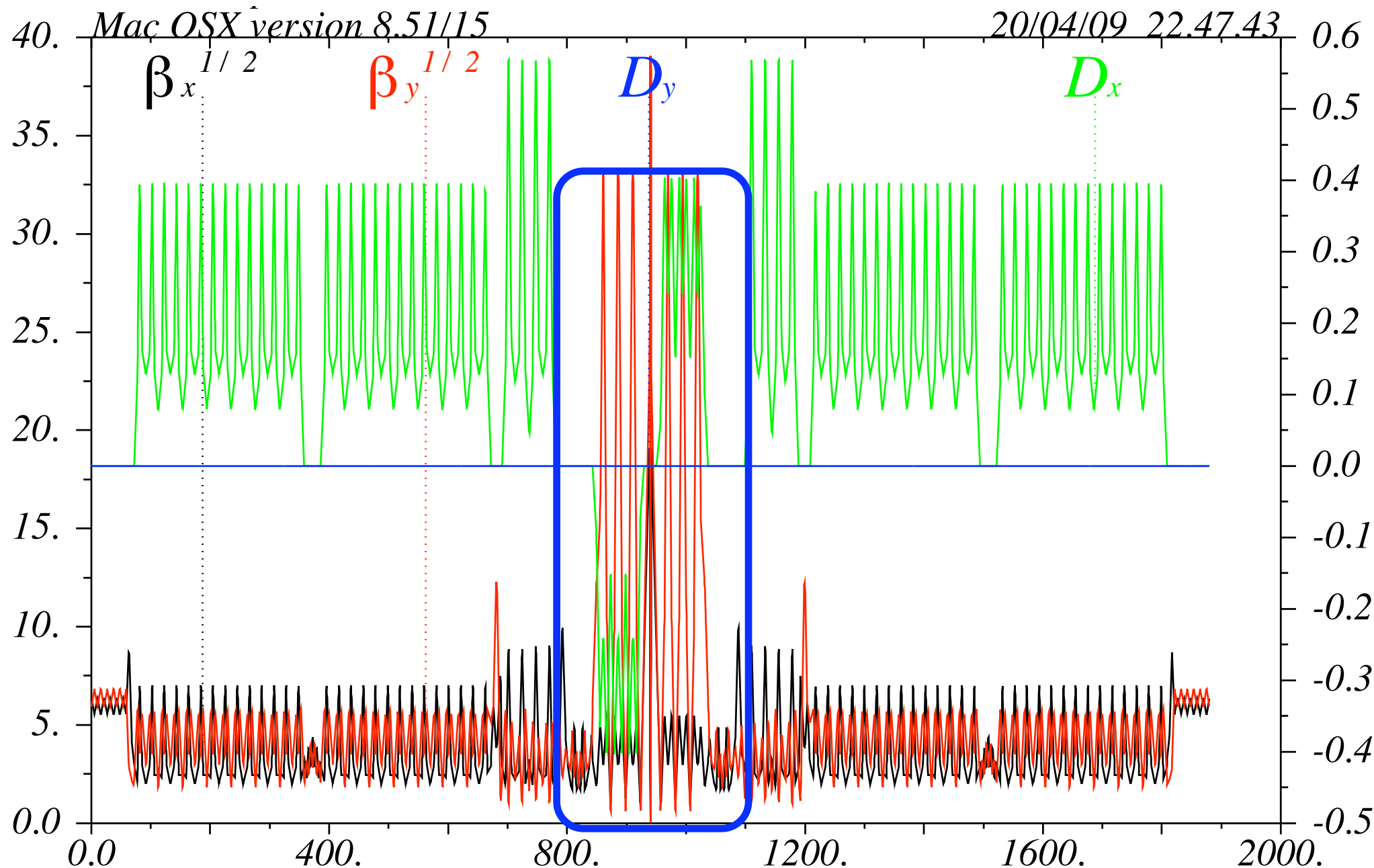


$\delta_E / p_{oc} = 0.$

HER with Reversed Bends Linear Optics

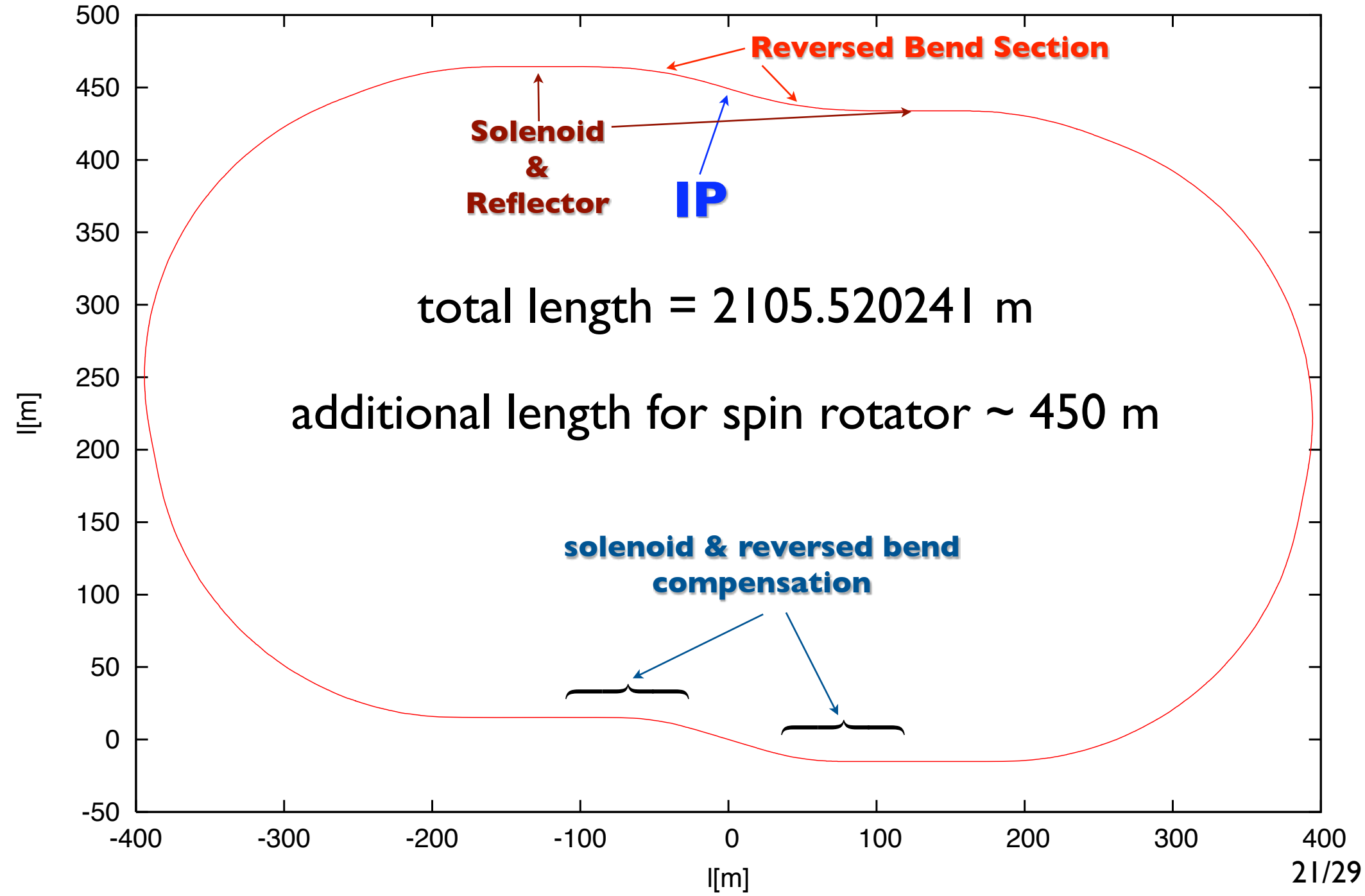
$\beta^{1/2} (m^{1/2})$

$D (m)$



HER Layout with SR and closed Geometry

MAD8 Survey Results.



Status (April 09)

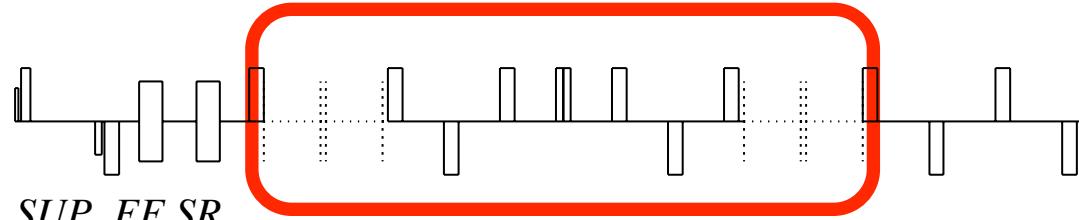
Full solution for HER & LER with no errors: We have a complete IR design with integrated spin rotator **turned on**, reversed bends and closed geometry. First MAD tracking performed shows workable dynamic aperture. Both new IR designs (QD0/QFI) were added.

Next Steps

Match the ring geometries: By using the same IR layout for the **LER** as shown for the **HER** the symmetry between the rings can be reestablished and a later upgrade for the polarized positrons preserved. There are no indications that this IR cannot be integrated in the shorter lattice.

Improve chromatic and dynamic properties and start tracking with errors.

LER SR in "New Short" Lattice

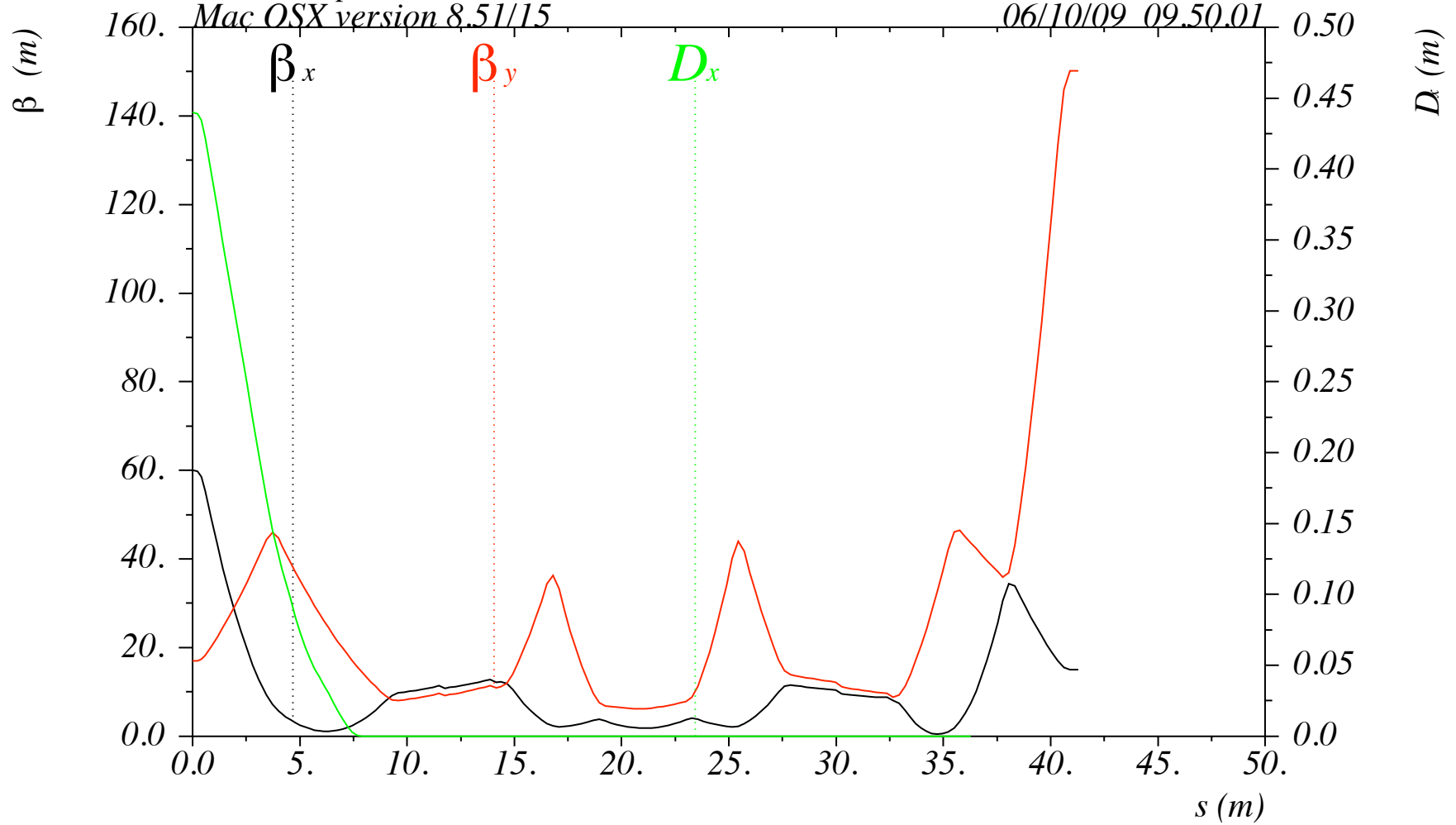


SUP_FF SR

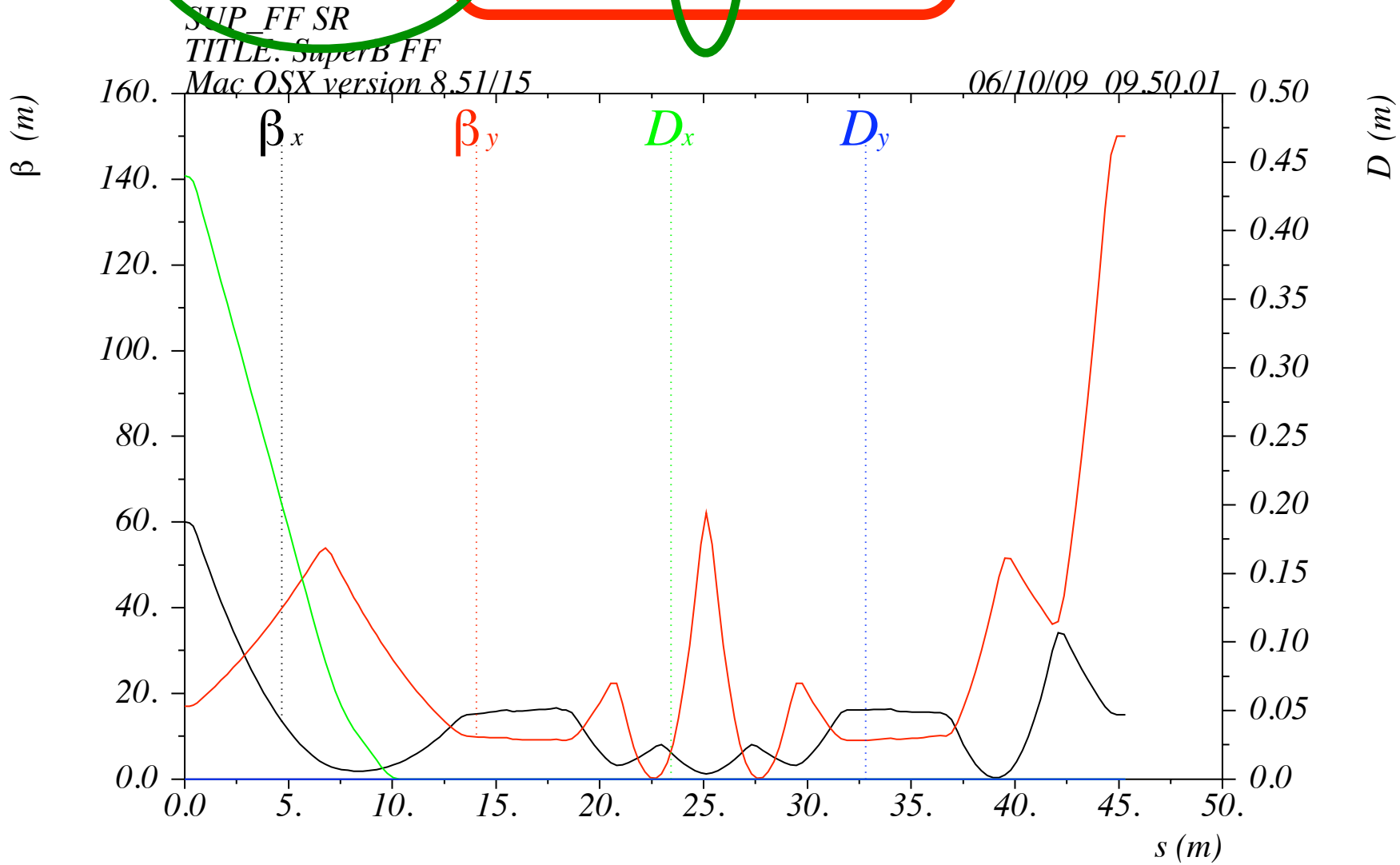
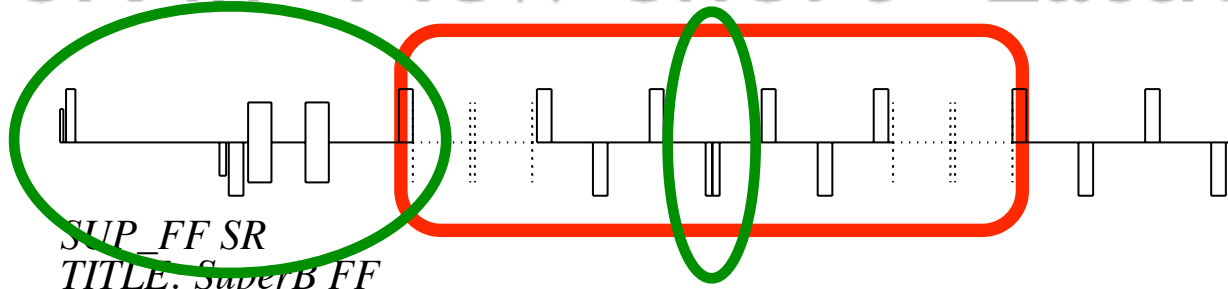
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Mac OSX version 8.51/15

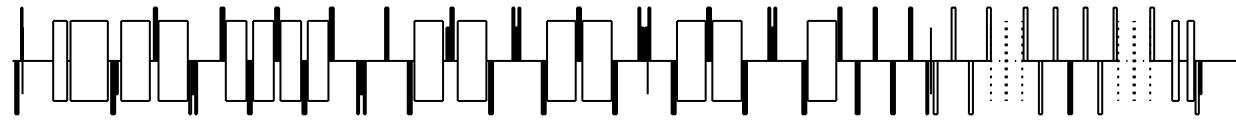
06/10/09 09.50.01



LER SR in "New Short" Lattice V2.01.002

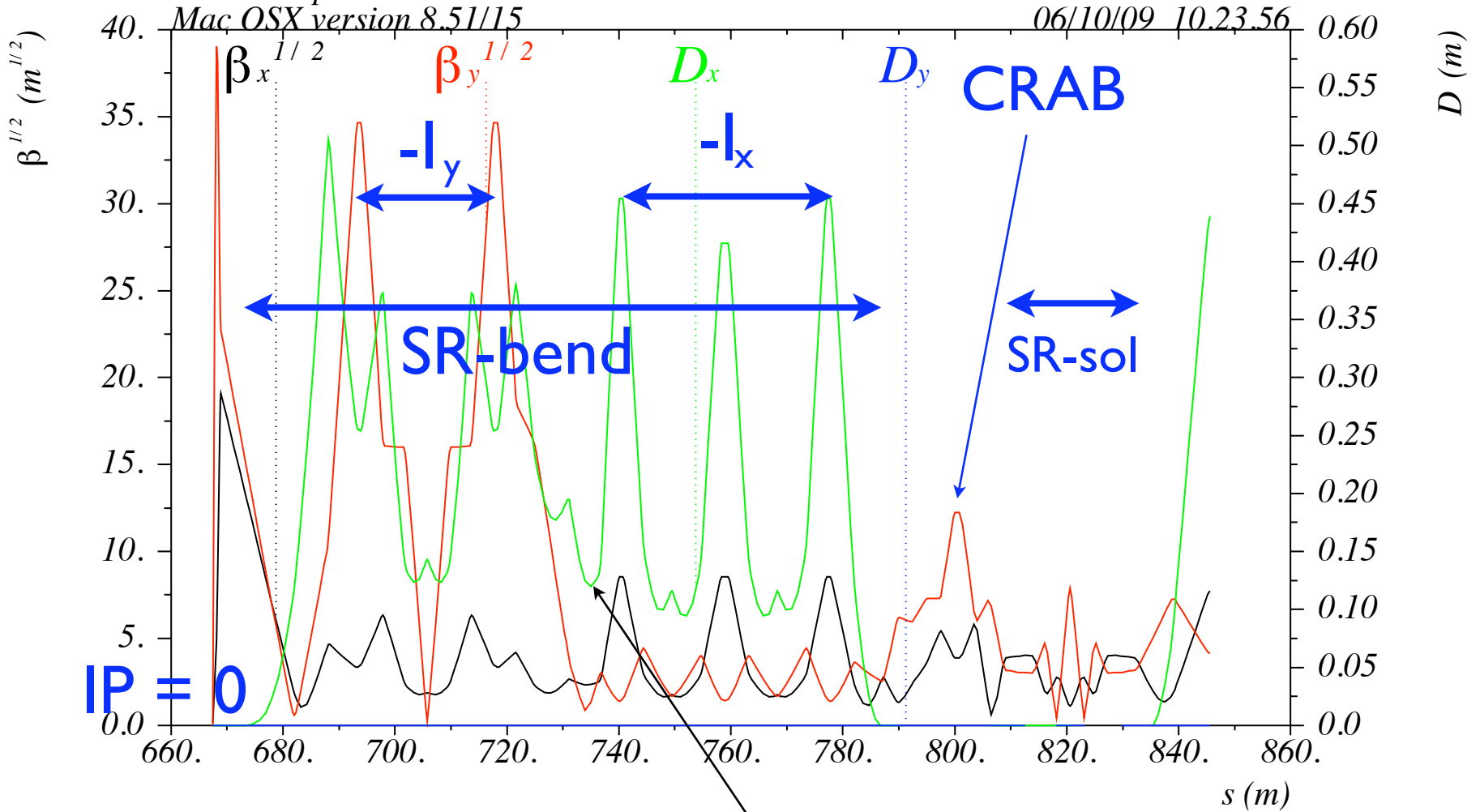


LER SR in "New Short" Lattice V2.01.002



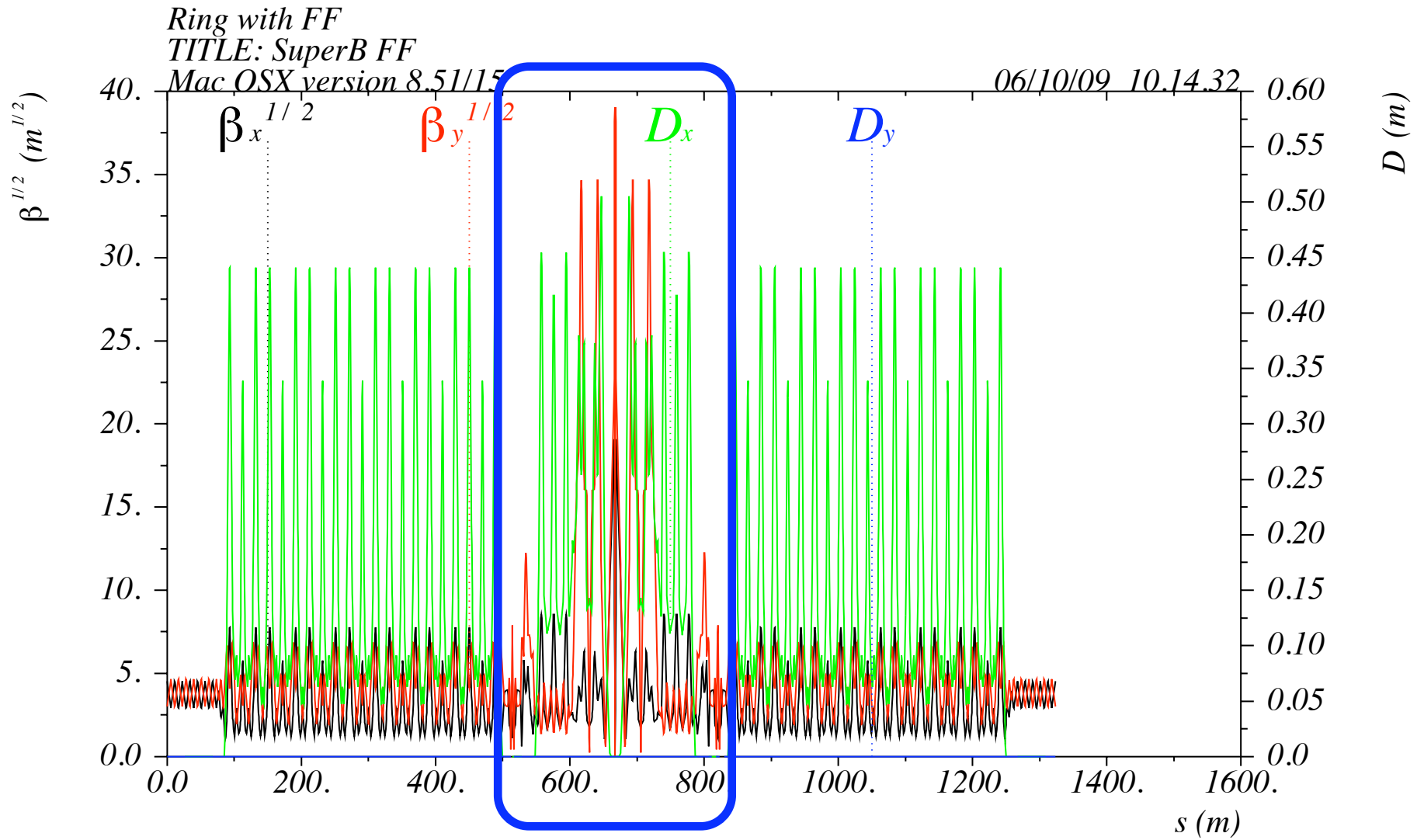
Ring with FF
TITLE: SuperB FF
Mac OSX version 8.51/15

06/10/09 10.23.56



old location

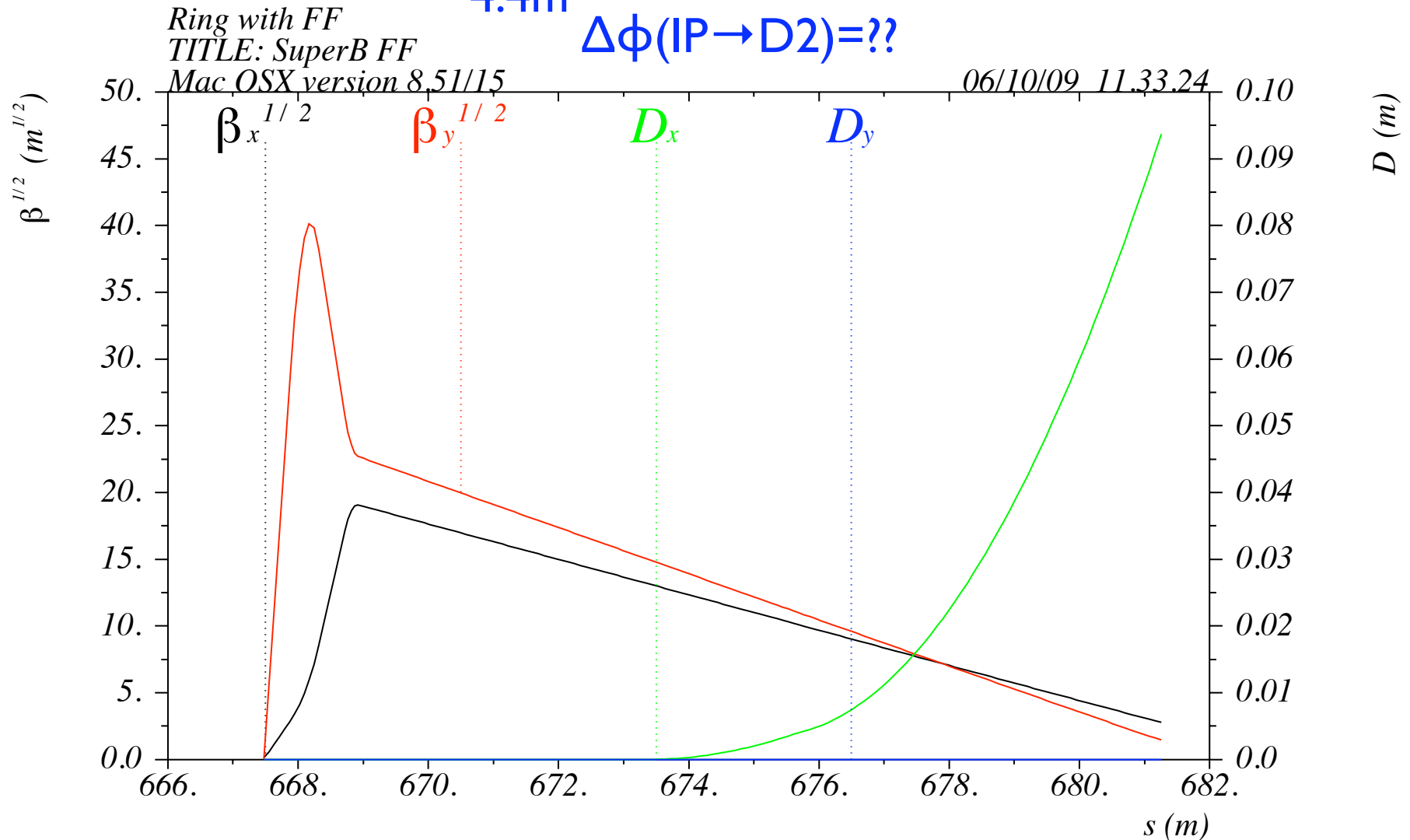
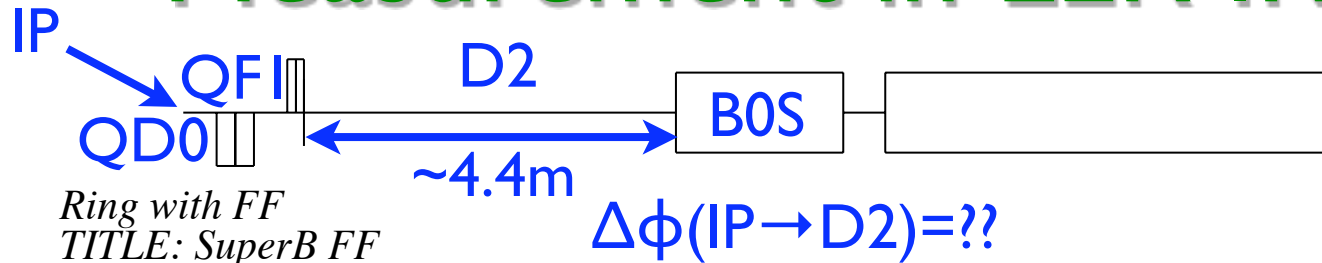
LER SR in "New Short" Lattice V2.0 I.002



Changes

- length: 41.2929 \Rightarrow 45.3144
- NO reversed bending in IR
- local position of SR

Possible Location for Polarization Measurement in LER IR



What's Next?

- **Full solution for LER with no errors:** We need a complete IR design with integrated spin rotator and closed geometry for the “short” rings.
=> FREEZE BASELINE!?
- INPUT !?!