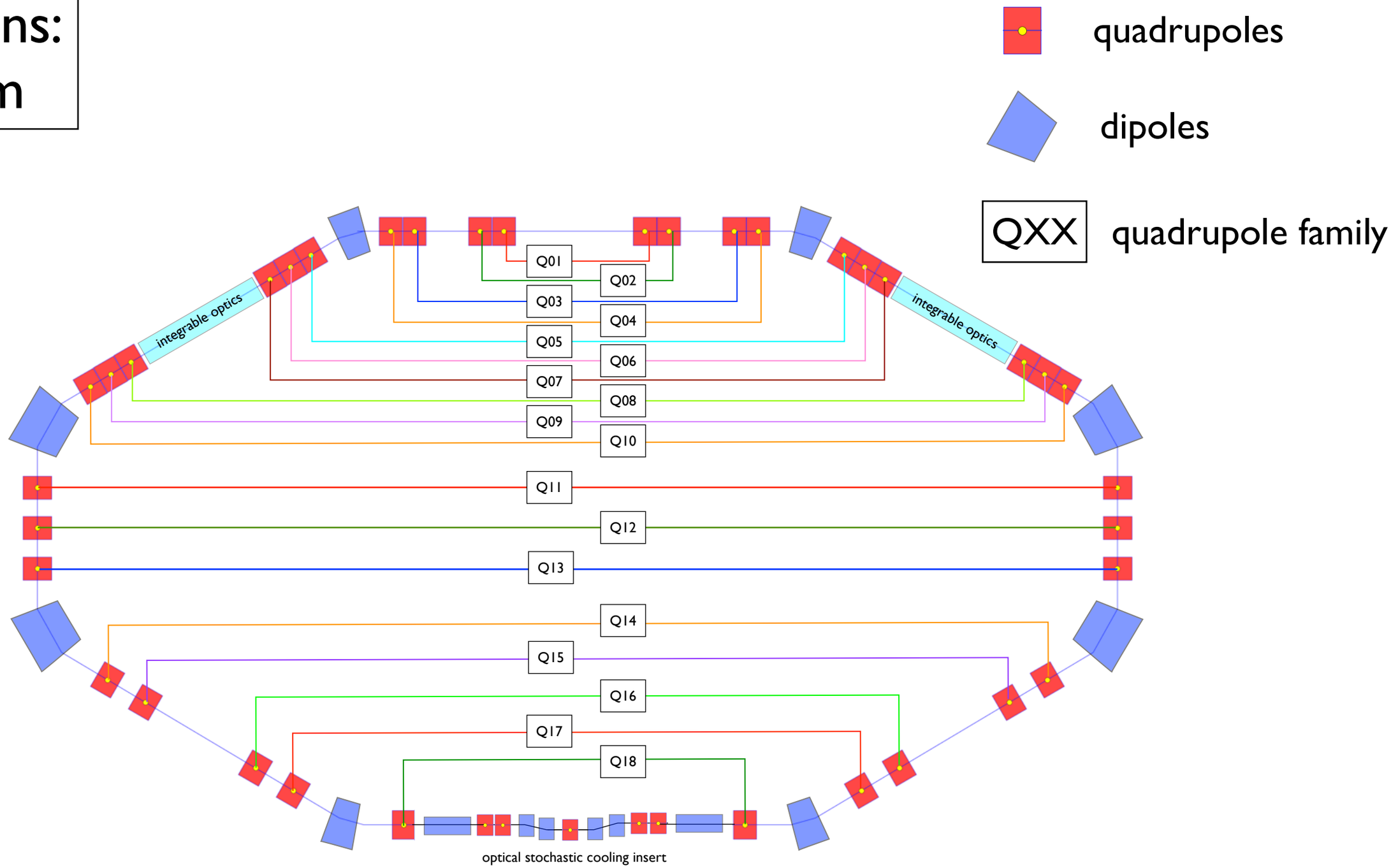
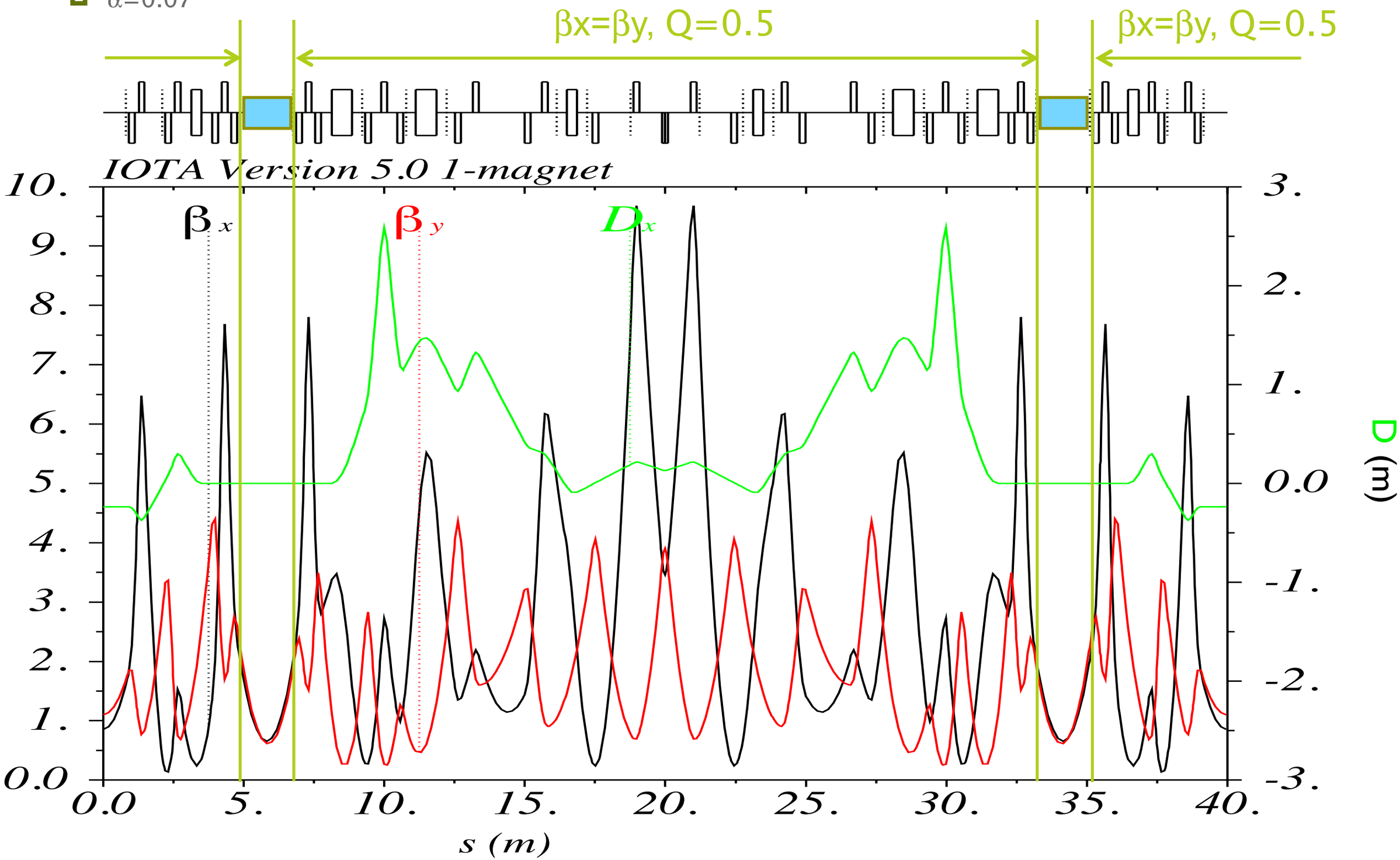
Layout

Dimensions:
15x10 m



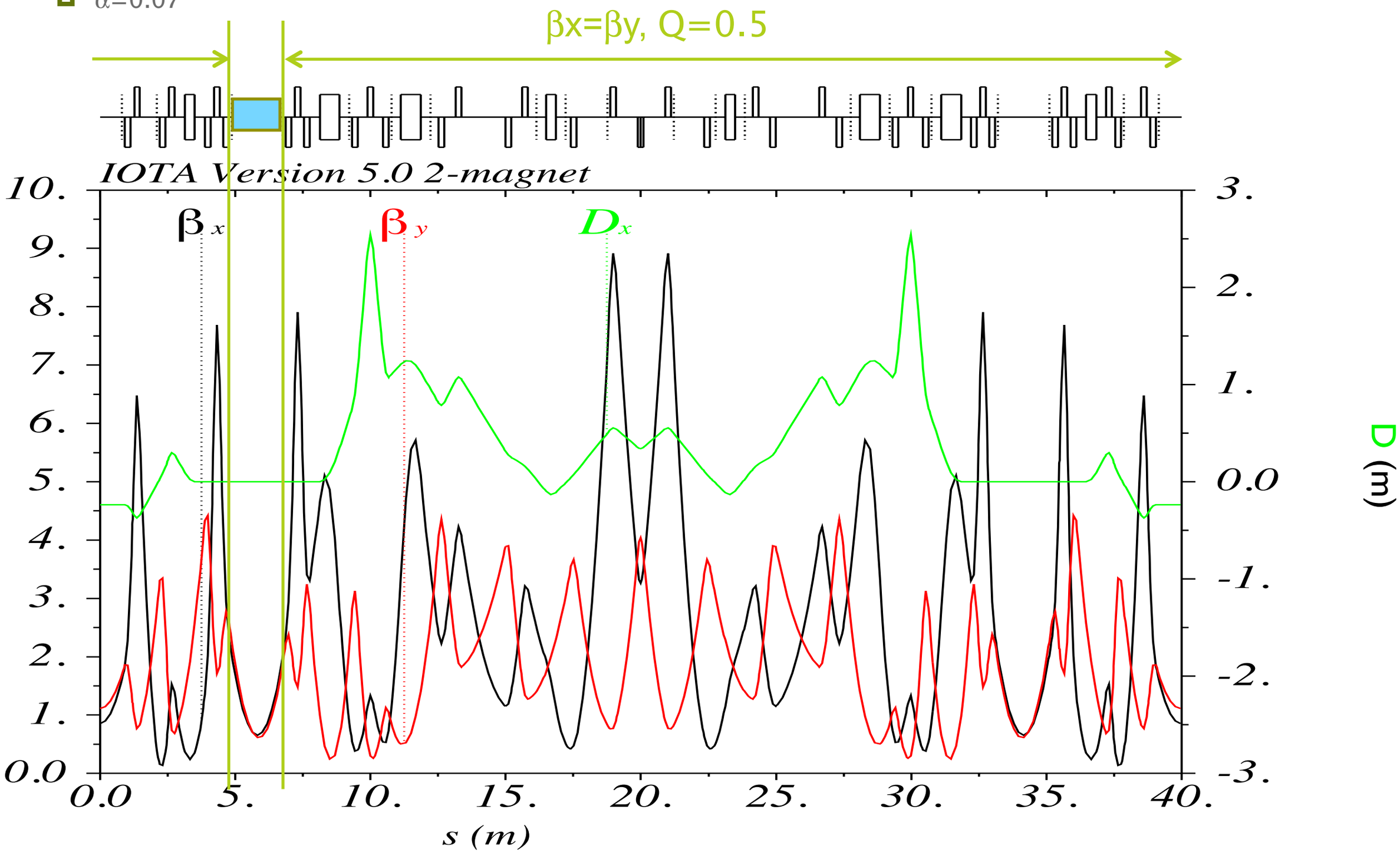
2-Magnet Lattice

- Equal beta-functions, Qx=4.5+0.3×2, Qy=4.5+0.3×2
- Dispersion=0 in the Nonlinear Magnet
- Maximum Vertical amplitude in the NM=11 mm
- α=0.07



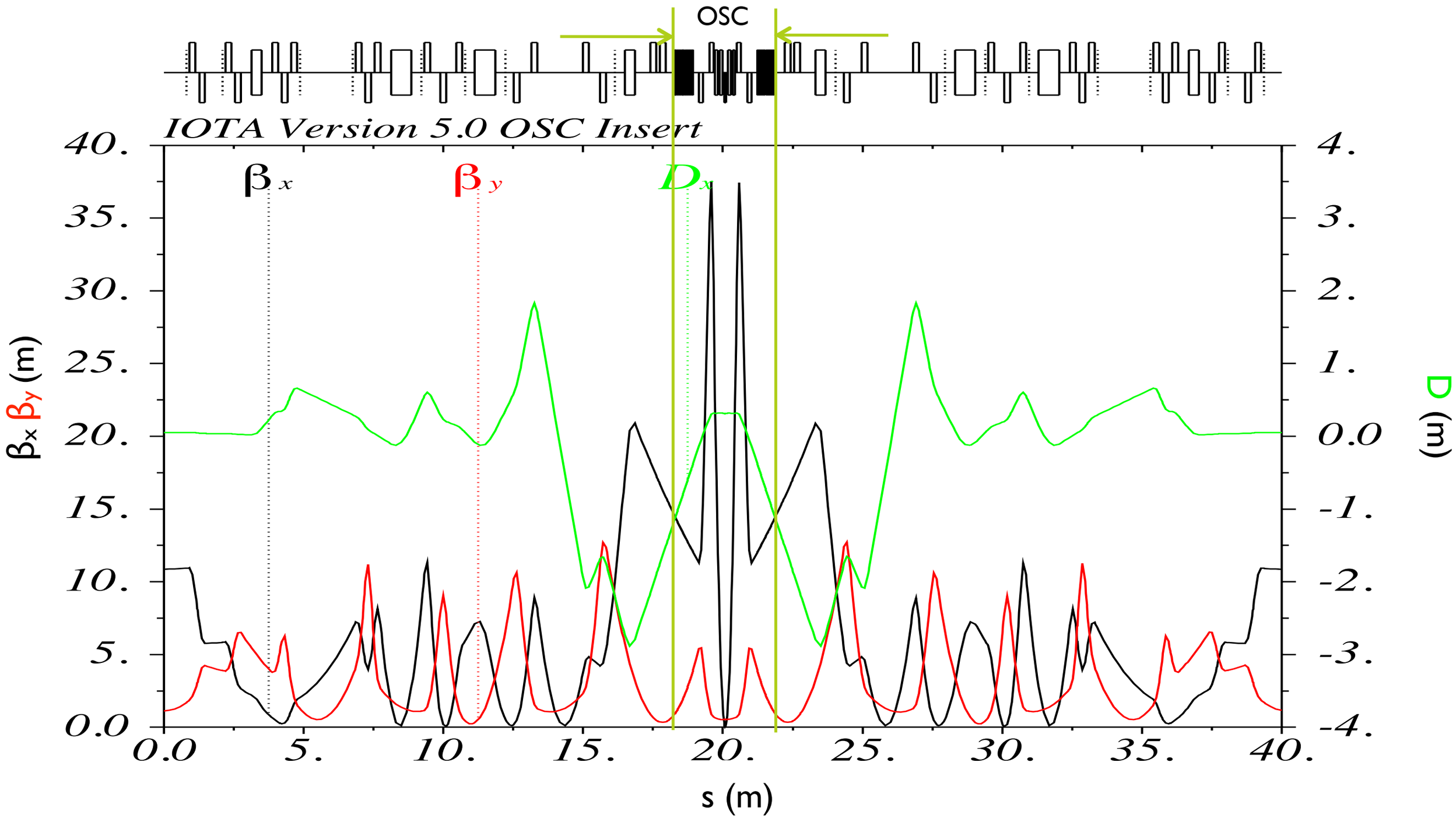
1-Magnet Lattice

- Equal beta-functions, Qx=5.0+0.3×2, Qy=5.0+0.3×2
- Dispersion=0 in the Nonlinear Magnet
- Maximum Vertical amplitude in the NM=11 mm
- α=0.07



OSC Lattice

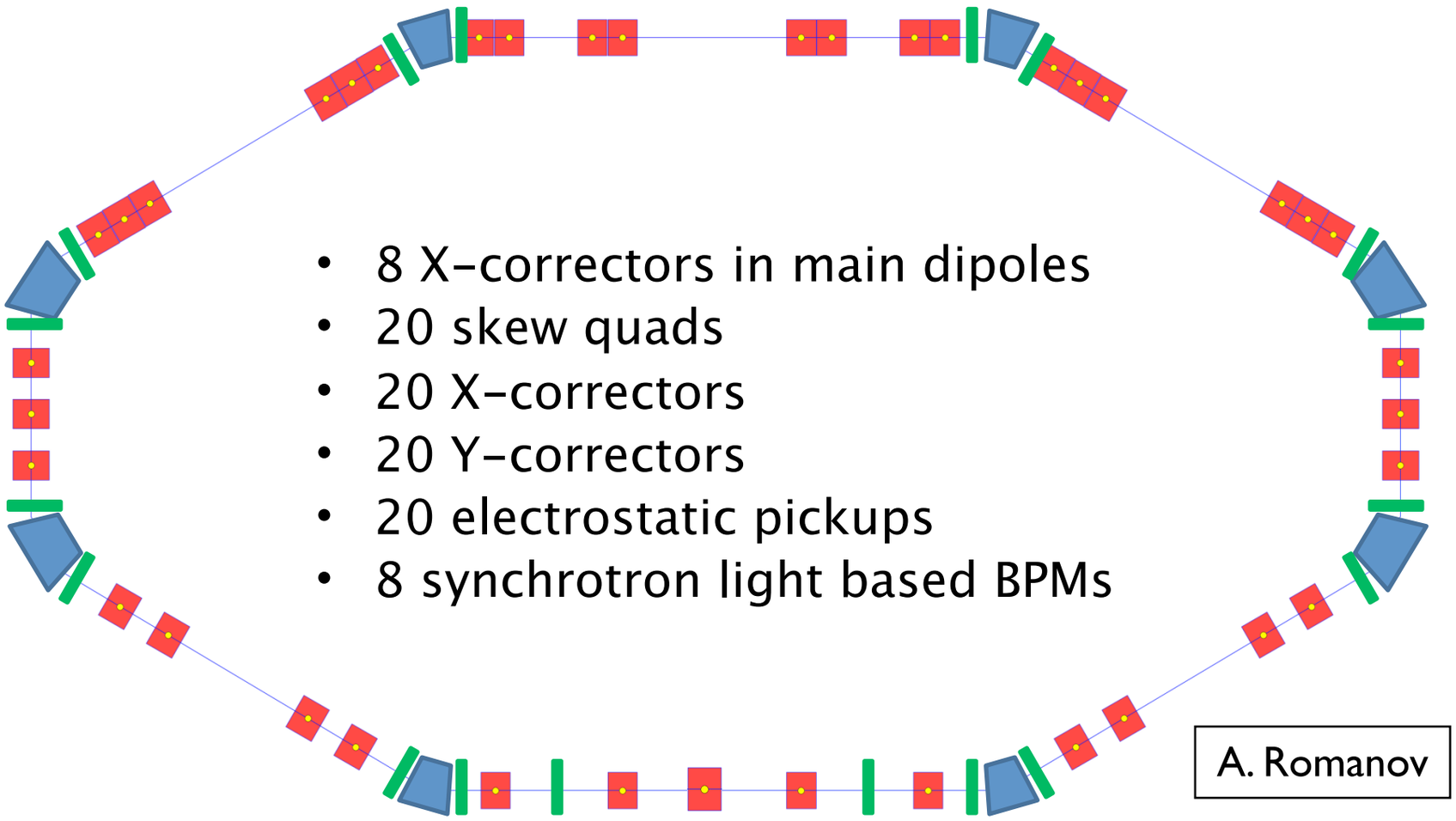
- Qx=5.6, Qy=4.6
- $\varepsilon_x = \varepsilon_y$ =11.5 nm
- Maximum amplitude in the ELens=17 mm
- α=-0.1



IOTA Parameters

Nominal e^- beam energy	150 MeV(g=295) or lower
Nominal e^- beam intensity	1×10^9
Circumference	37.3 m
Bending field	0.7 T
Beam pipe aperture	50 mm dia.
Maximum b-function (x,y)	12, 5 m
Momentum compaction	0.02 ÷ 0.1
Betatron tune	3 ÷ 5
Natural chromaticity	-6 ÷ -10
Transverse emittance r.m.s.	0.1 mm
SR damping time	0.6s (5×10^6 turns)
RF V,f,q	25 kV, 64.2 MHz, 8
Synchrotron tune	0.002 ÷ 0.005
Bunch length, momentum spread	1-2 cm, 1.4×10^{-4}

BPMs/Correctors



- 8 X-correctors in main dipoles
- 20 skew quads
- 20 X-correctors
- 20 Y-correctors
- 20 electrostatic pickups
- 8 synchrotron light based BPMs

- allowable errors in integrable optics:
  - betas: 1%
  - dispersion: 1 cm
  - closed orbit: 50 um
- phase advance error: 0.001