

Electron Column Simulation Update

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Electron Column Modeling Meeting
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Present Objectives

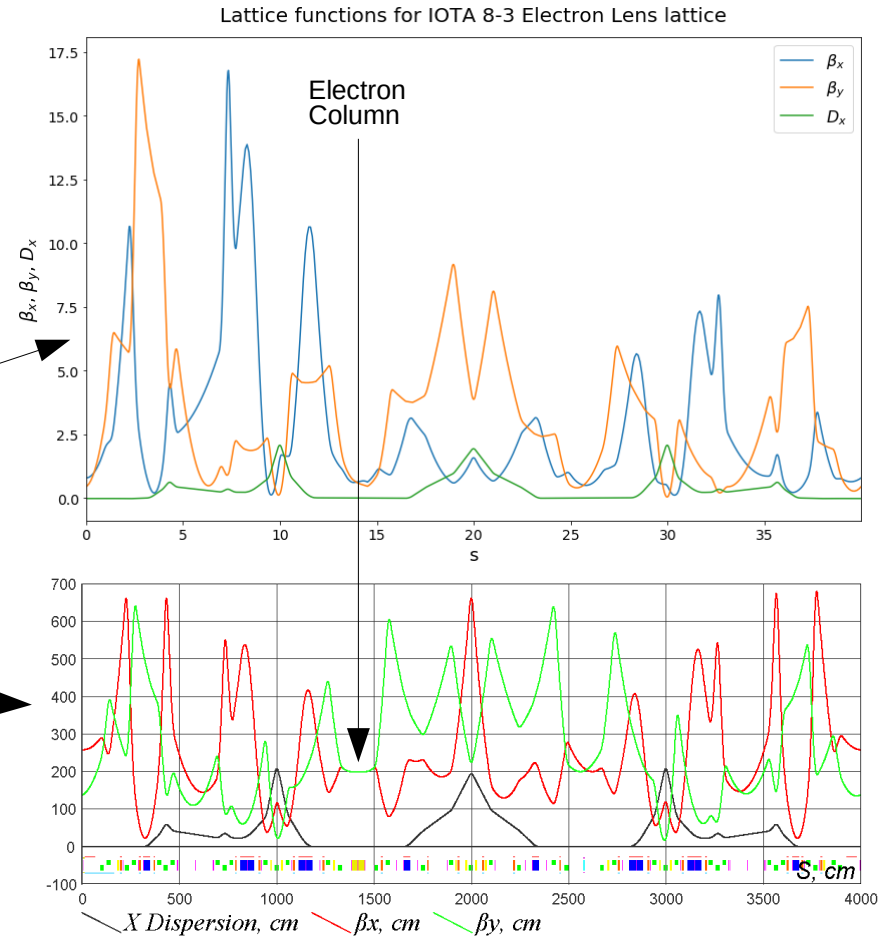
- Create a beam matched to the most current Electron Lens lattice (version 8.3, according to A. Romanov)
- Propagate beam from injection to beginning of Electron Column
- Load beam distribution into Warp; run through Warp, save distribution at exit of Column
- Load beam distribution into Synergia; run through Synergia to entrance of Column

Status – I

- Sasha has provided MAD-X file version 8.3 with Electron Lens configuration
- This file differs significantly from existing MAD-X lattice files on Jupyter server (for example, one nonlinear magnet – lattice_1IO_dQ_1.madx)
 - Existing files have been reduced from Sasha's files, i.e. only contain magnet strengths & locations, and beam parameters
 - Sasha's files contain additional features, i.e. chromaticity matching
- With appropriate commenting-out of v8.3 madx file, Synergia will import lattice

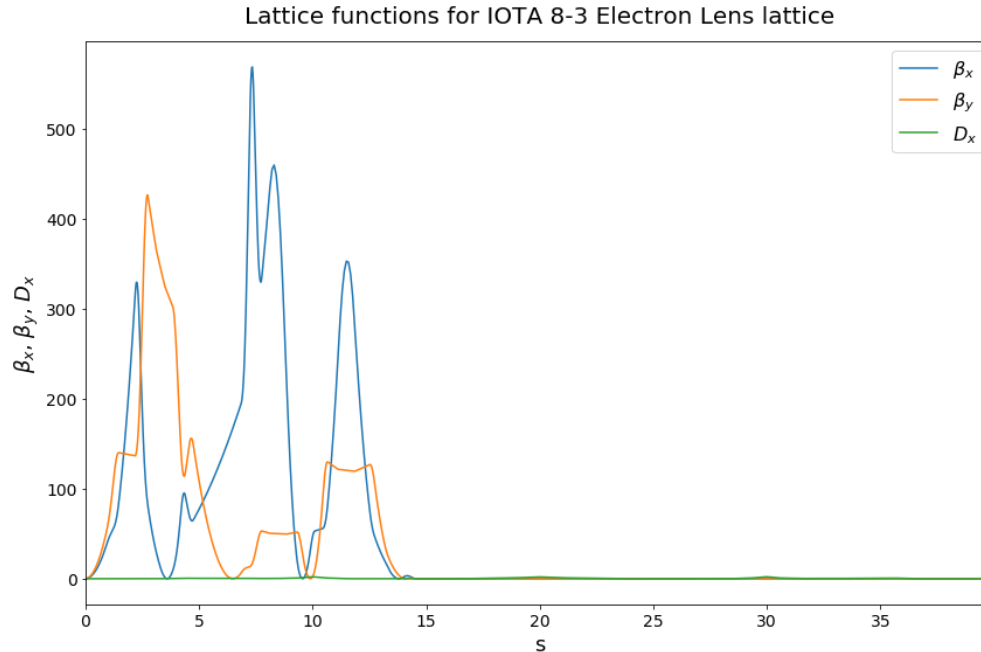
Status – II

- Comparing lattice functions (for electrons) from Jupyter server (top) versus Sasha's presentation from IOTA collaboration meeting last year (bottom)



Status – III

- Lattice functions for protons even worse



Outlook

- Further work needs to be done on conversion of MAD-X file to Synergia
- Diagnostics for reading particle distributions at various locations around IOTA ring seem reasonable so far