

LhARA Stage 1 Optimisation

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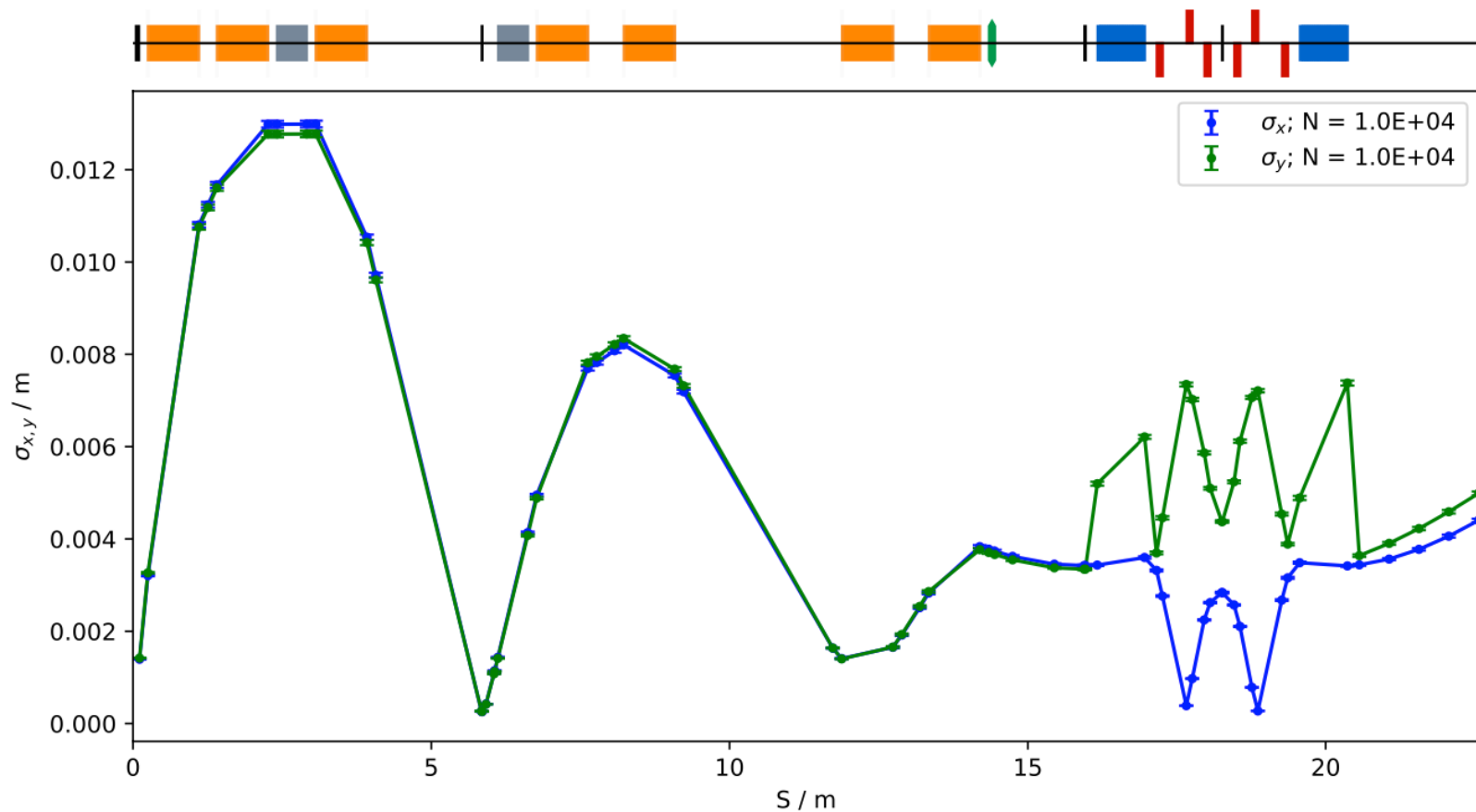
WP6 Meeting

14th February 2023



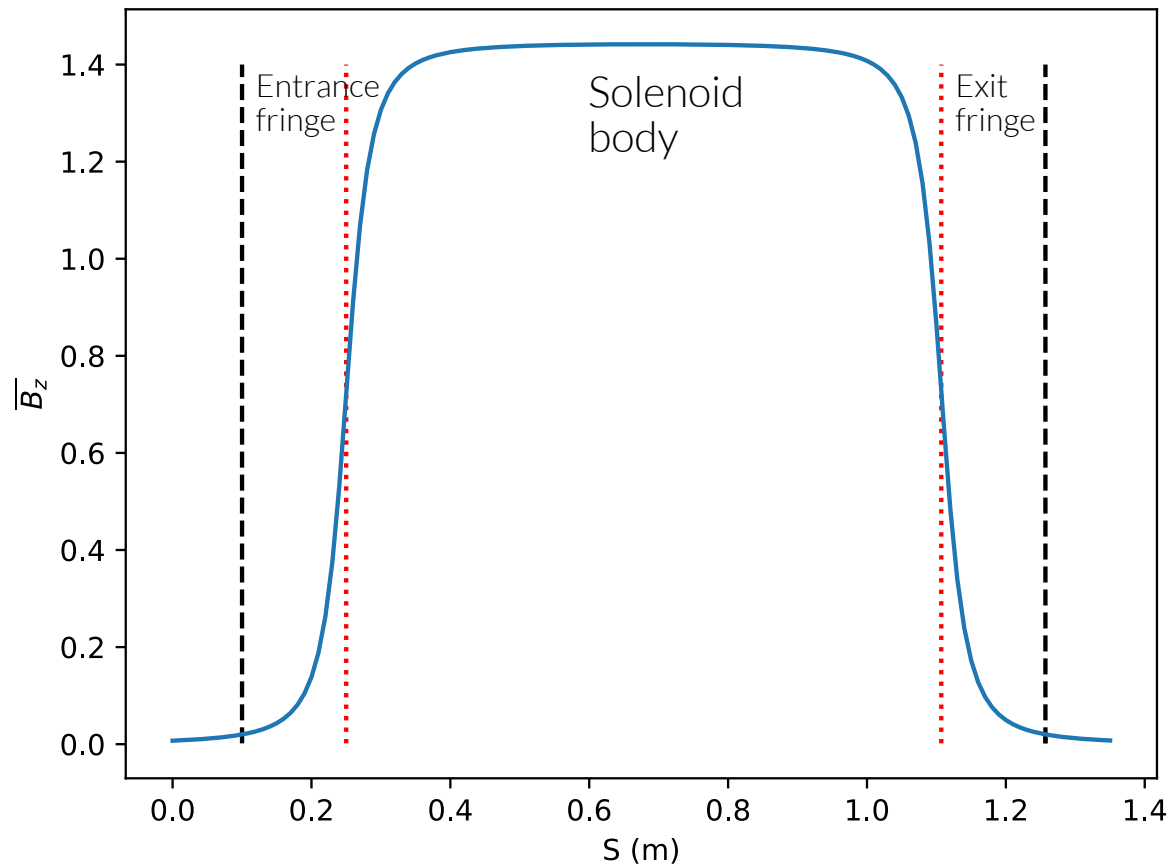
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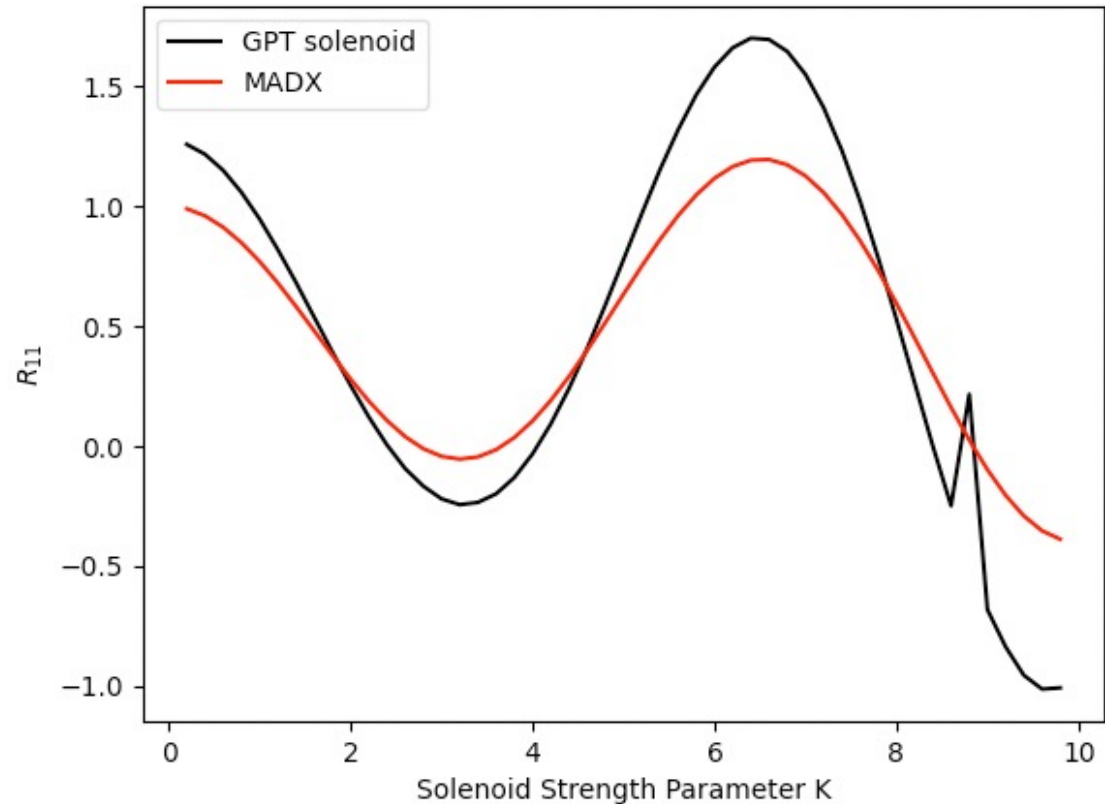


- GPT optimisation ongoing – no major progress
- Vary drift length after GL5?
- hepsrv106 restarted overnight

- GPT solenoids not hard edged like MADX/beamoptics?
- SVD – reconstruct 4D whole solenoid transport matrix from GPT simulations (no space charge)
 - Assume linear
- Optimise MADX model with general Rmatrix replacing solenoids



- Have Rmatrix – clear difference in behaviour compared to theory
- Discontinuity for $K=8.8$ – not understood
- Rmatrix ratio of some elements have trig function characteristics
 - Ongoing



- Done:

- Ongoing:
 - Find solutions for smaller beam sizes
 - SVD analysis of GPT solenoids
 - Update models of alternative baseline design (v5.5)

- Todo:
 - Model beams with full energy spread
 - Quads only model (v6.0)
 - Develop OPAL model of FFA – need JP input.