

# Discussion: HERA Dipole Magnet Pole Shoe Design

Optimized by CST Studio

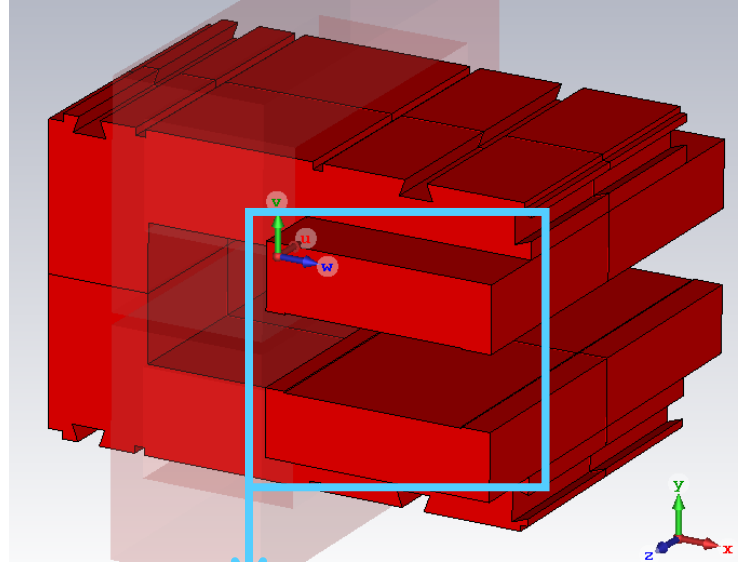
Anusorn Lueangaramwong  
PITHz meeting on 04.09.2019

# Dipole Magnet Pole Shoes

## Design and Field

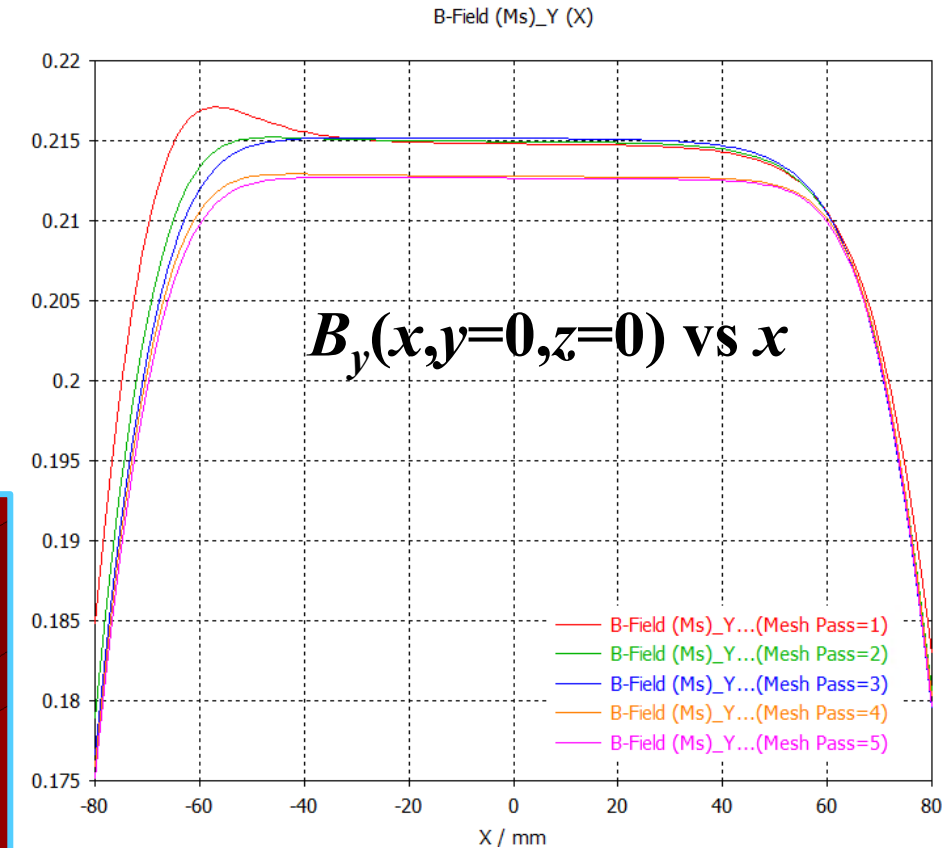
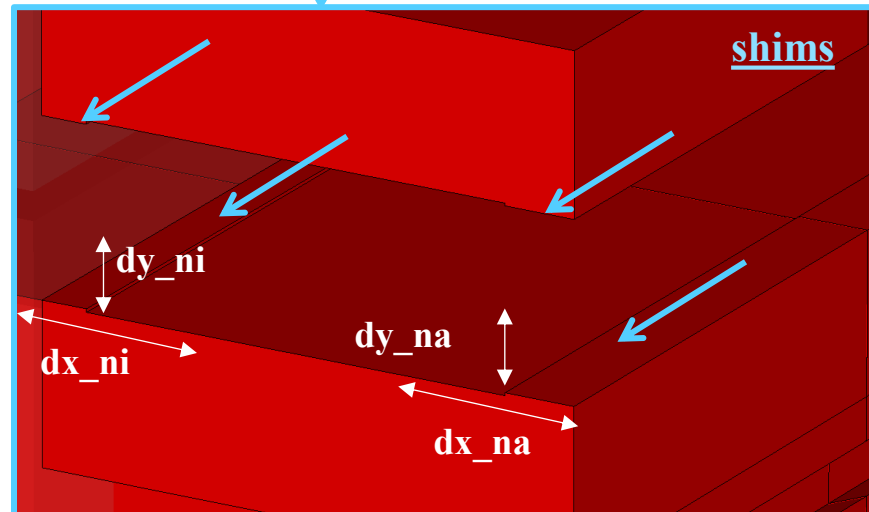
### Shims

- added for B-field flatness
- 4 shims (2 inner & 2 outer)



### CST Studio

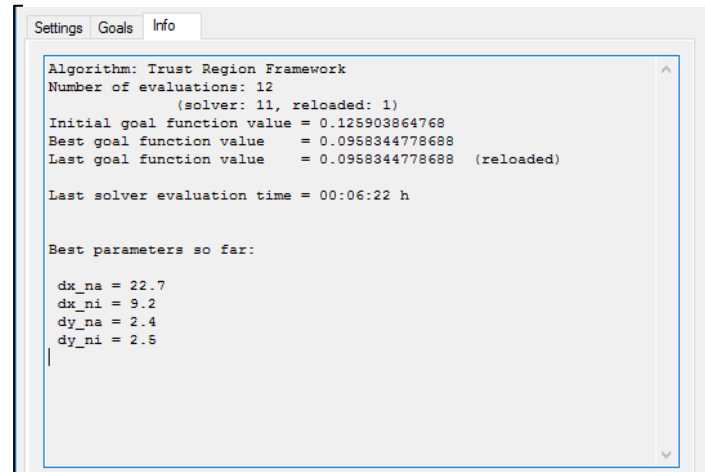
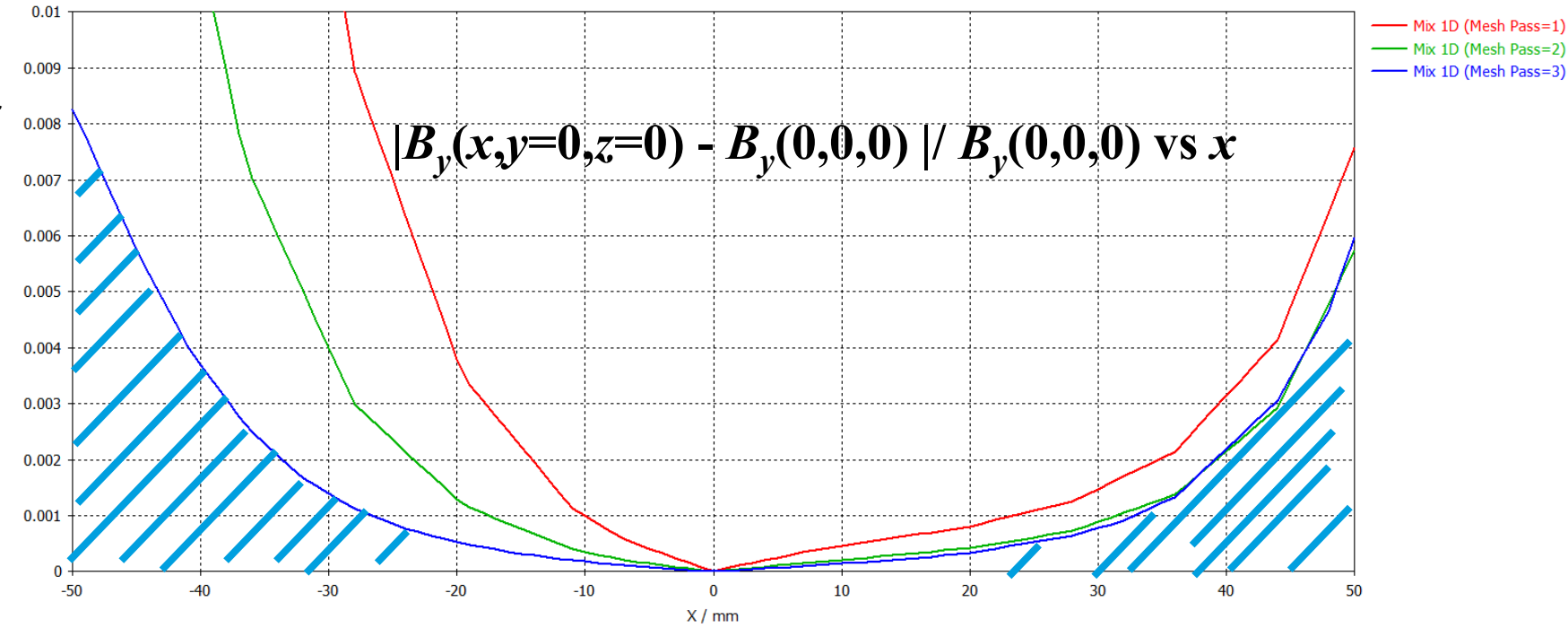
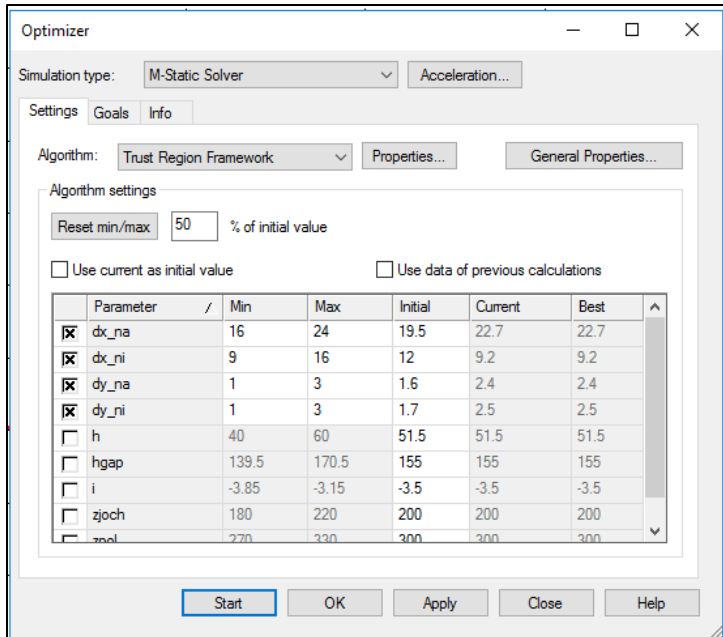
- Original file from Mikhail
- Magnetic Solver
- Minimum 5 passes, each doubles meshes in  $x, y, z$
- More details in CST file



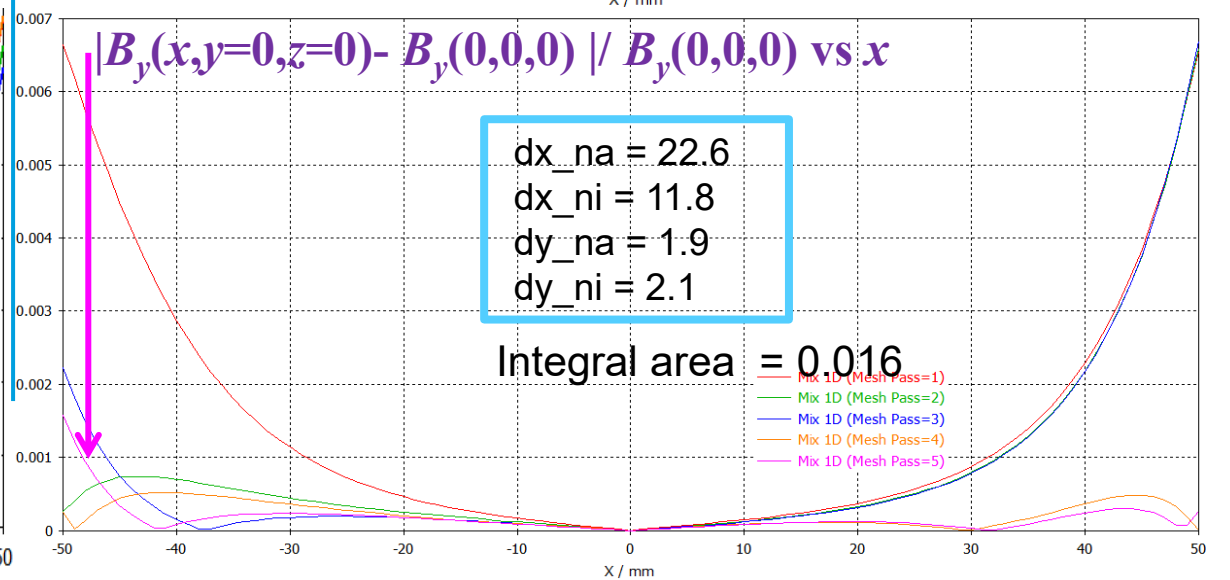
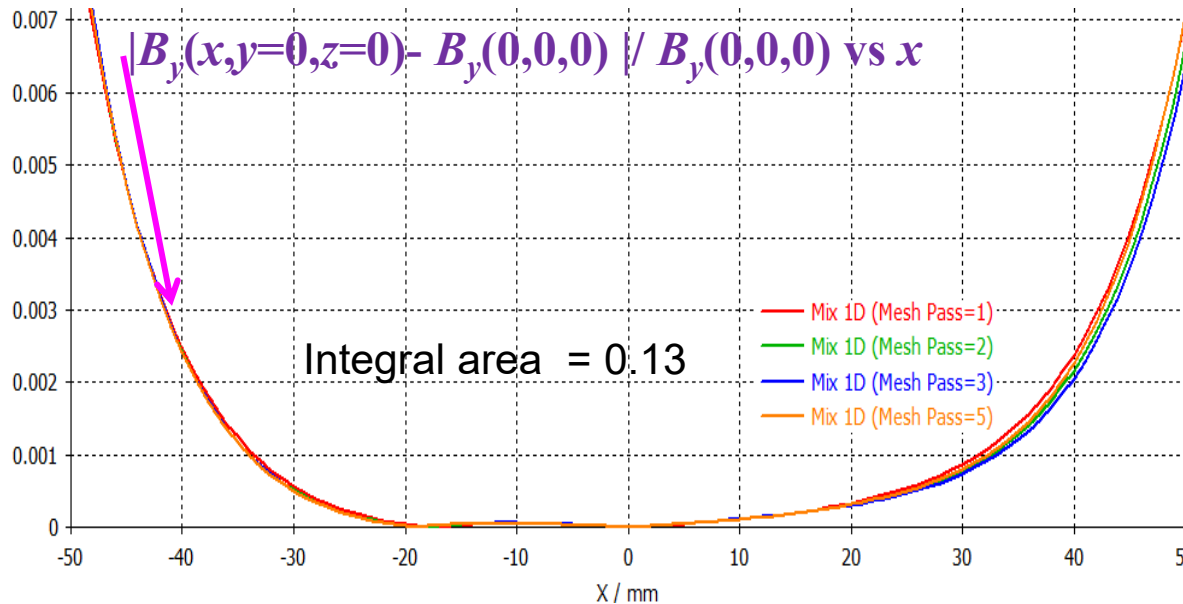
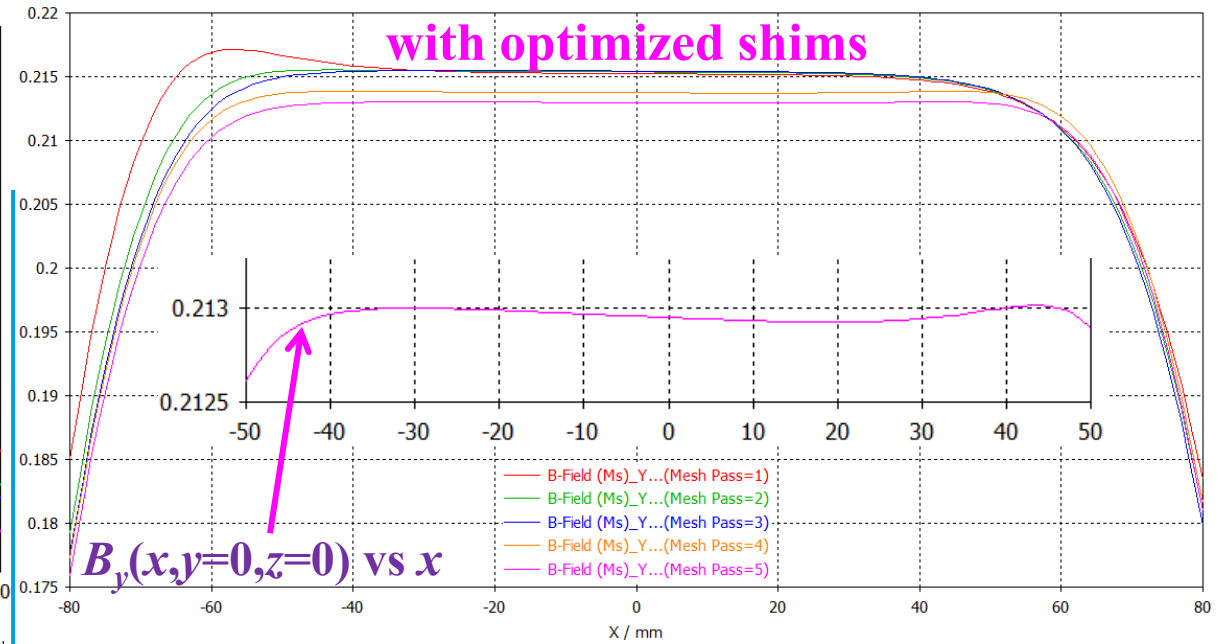
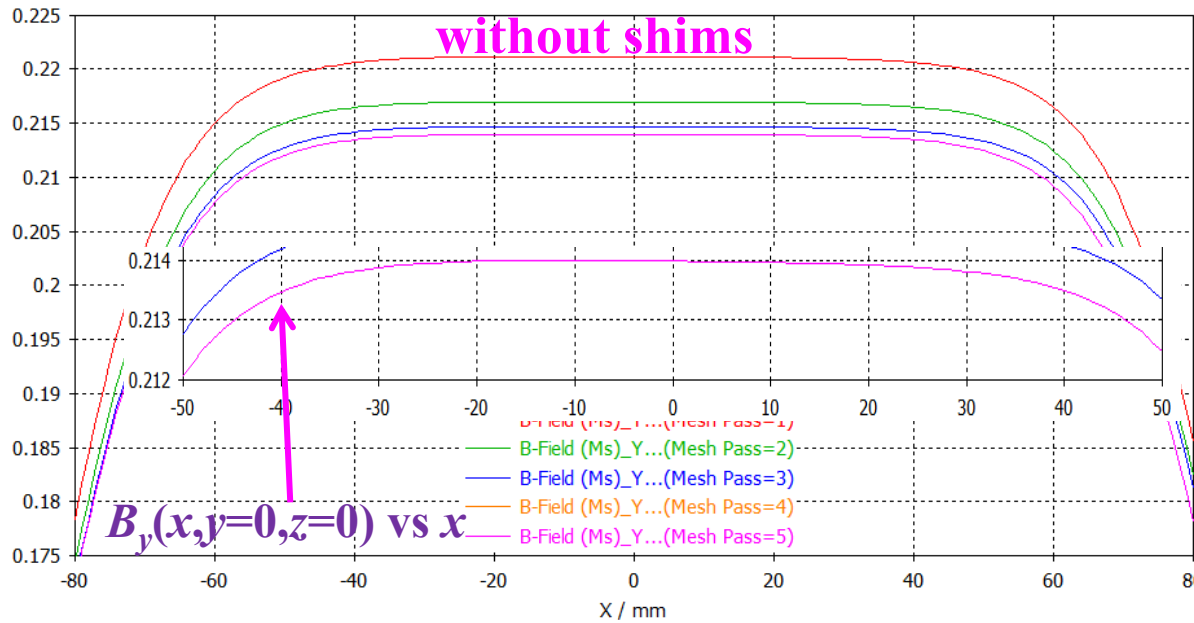
# Optimizer in CST Studio

## Error function and flatness

- Minimizing an Integral of error function from -50 to 50 mm



# Result



# Note

- Refinement factor of pole shoe components is changed from 3 in the originals to 10
- After 5 passes of refinement,  $B_y$  trends are still not converging
- Simulation with 6 passes may take longer than a day during a parallel computing with 8 Cores

# Discussion

# Backup: Result

