

Week 2

July 16, 2014

plotter script

plotter script

- ▶ 324 sloc

plotter script

- ▶ 324 sloc
- ▶ reads RotationShield and FieldMapping VI input

plotter script

- ▶ 324 sloc
- ▶ reads RotationShield and FieldMapping VI input
- ▶ uses new normalization method

plotter script

- ▶ 324 sloc
- ▶ reads RotationShield and FieldMapping VI input
- ▶ uses new normalization method
 - ▶ average of data points near $(0, 0, 0)$ vs. polynomial fit

plotter script

- ▶ 324 sloc
- ▶ reads RotationShield and FieldMapping VI input
- ▶ uses new normalization method
 - ▶ average of data points near $(0, 0, 0)$ vs. polynomial fit
 - ▶ calculates desired normalization level - average B_x of measured maps

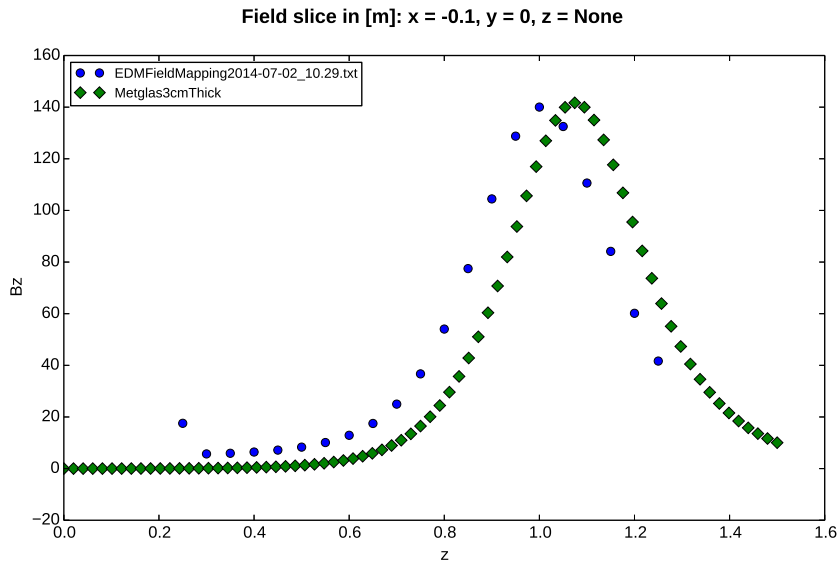
plotter script

- ▶ 324 sloc
- ▶ reads RotationShield and FieldMapping VI input
- ▶ uses new normalization method
 - ▶ average of data points near $(0, 0, 0)$ vs. polynomial fit
 - ▶ calculates desired normalization level - average B_x of measured maps
- ▶ handles custom field slices

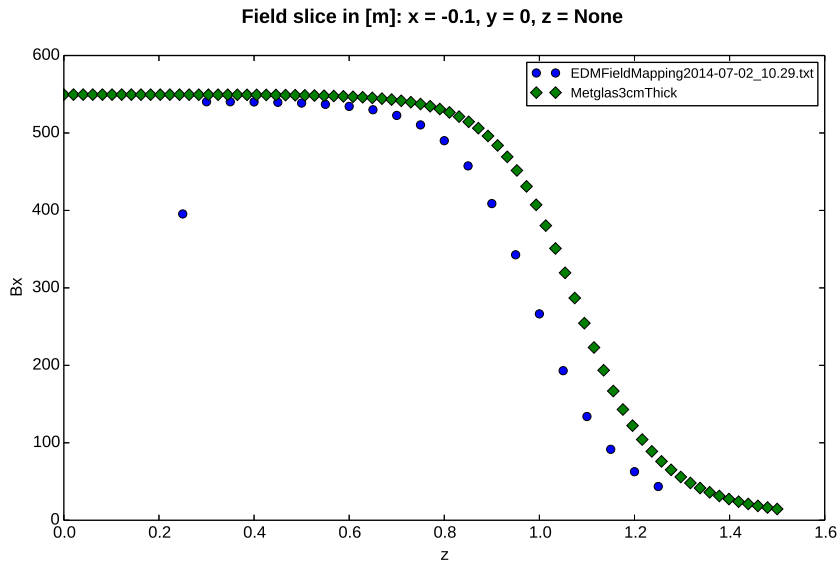
plotter script

- ▶ 324 sloc
- ▶ reads RotationShield and FieldMapping VI input
- ▶ uses new normalization method
 - ▶ average of data points near $(0, 0, 0)$ vs. polynomial fit
 - ▶ calculates desired normalization level - average B_x of measured maps
- ▶ handles custom field slices
- ▶ to-do: field gradients, interpolation, smooth plots

10 cm offset between map & simulation



10 cm offset between map & simulation



modifications to account for 10 cm offset

- ▶ varied metglas thickness from 5 cm to 1 mm (closest to actual)

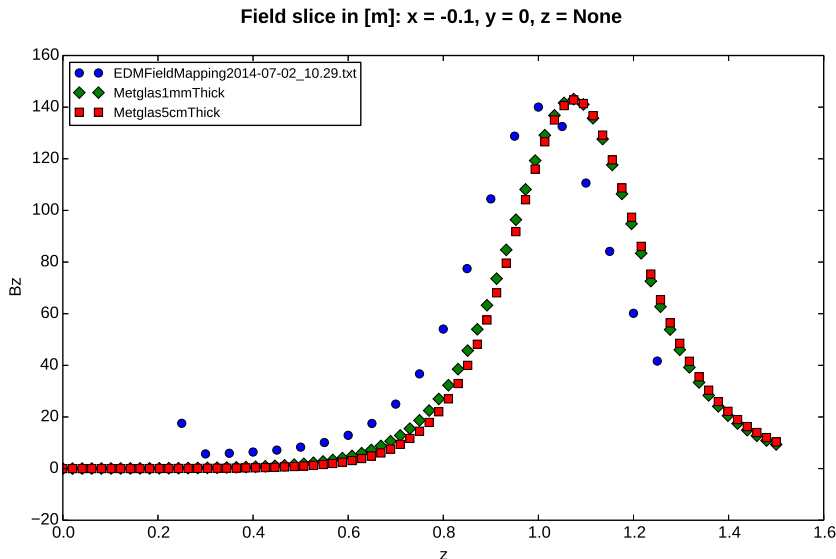
modifications to account for 10 cm offset

- ▶ varied metglas thickness from 5 cm to 1 mm (closest to actual)
- ▶ extended metglas slightly (2 cm) above B_0 coil

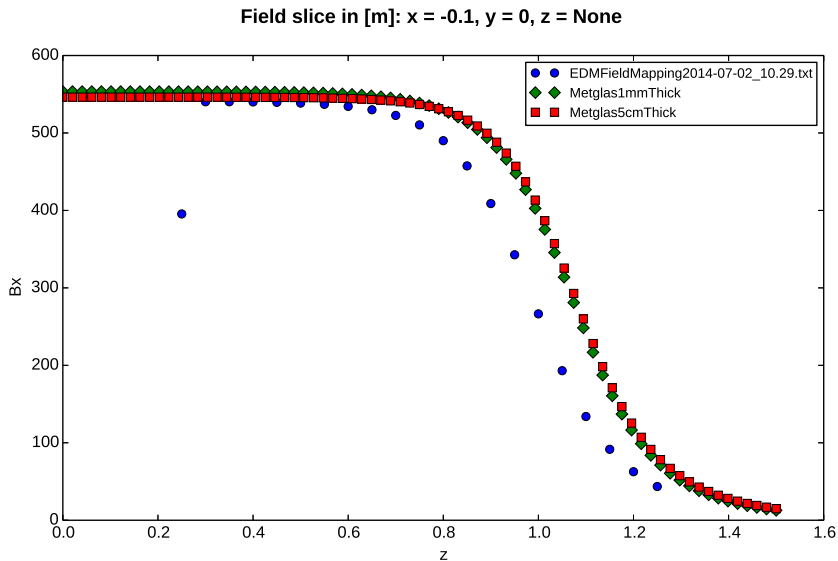
modifications to account for 10 cm offset

- ▶ varied metglas thickness from 5 cm to 1 mm (closest to actual)
- ▶ extended metglas slightly (2 cm) above B_0 coil
- ▶ extended metglas far (10 cm) above B_0 coil to highlight effects

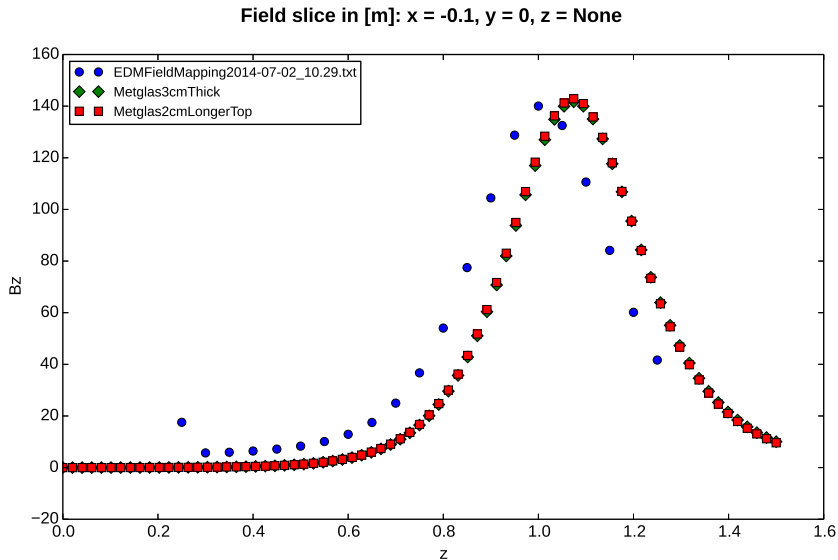
varying thickness: small change in B magnitude, no shift



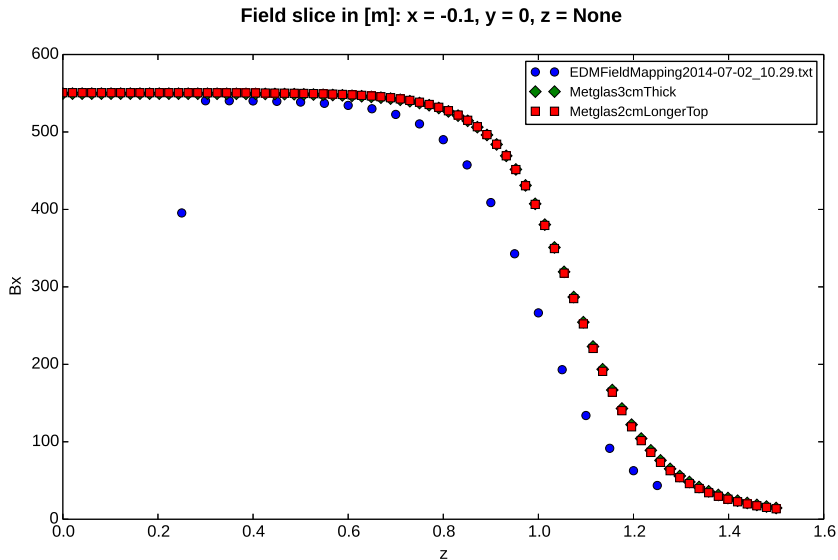
varying thickness: small change in B magnitude, no shift



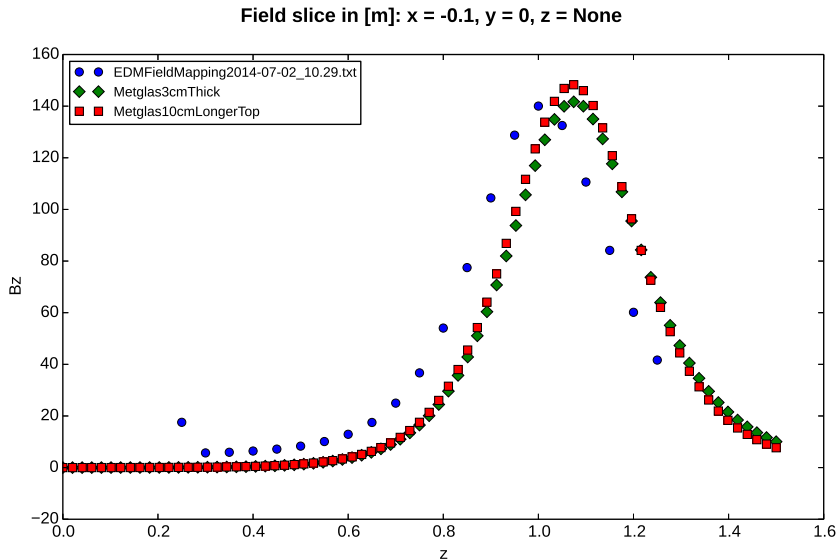
2 cm longer on top: small magnitude change



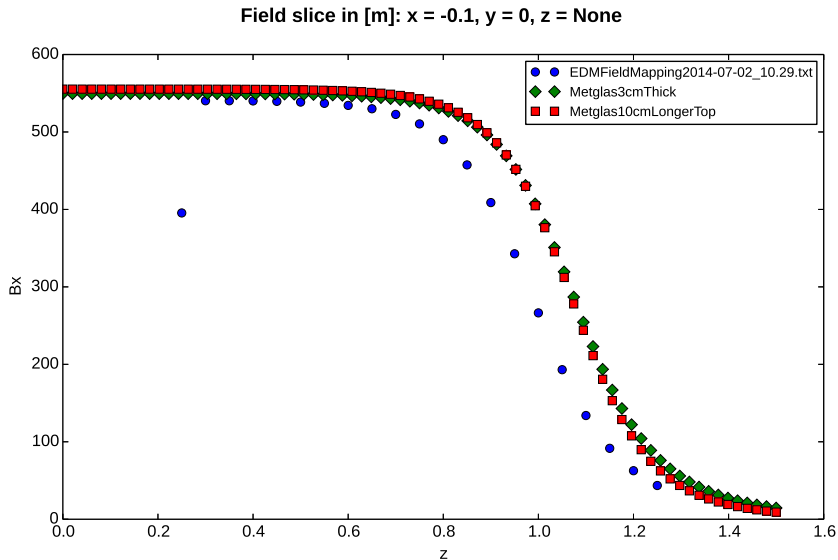
2 cm longer on top: small magnitude change



10 cm longer on top: confirms magnitude change



10 cm longer on top: confirms magnitude change



other things to try

other things to try

- ▶ metglas shearing - hard to model

other things to try

- ▶ metglas shearing - hard to model
 - ▶ `RotationShield` handles arbitrary fields (e.g. you can put a line current anywhere)

other things to try

- ▶ metglas shearing - hard to model
 - ▶ `RotationShield` handles arbitrary fields (e.g. you can put a line current anywhere)
 - ▶ but before applying the field it builds an interaction matrix - requires azimuthal symmetry

other things to try

- ▶ metglas shearing - hard to model
 - ▶ `RotationShield` handles arbitrary fields (e.g. you can put a line current anywhere)
 - ▶ but before applying the field it builds an interaction matrix - requires azimuthal symmetry
- ▶ rigorously check centering, dimensions of experimental setup