ÉCOLE POLYTECHNIQUE
FÉDÉRALE DE LAUSANNE

Field Map Parametrisation: Current Status

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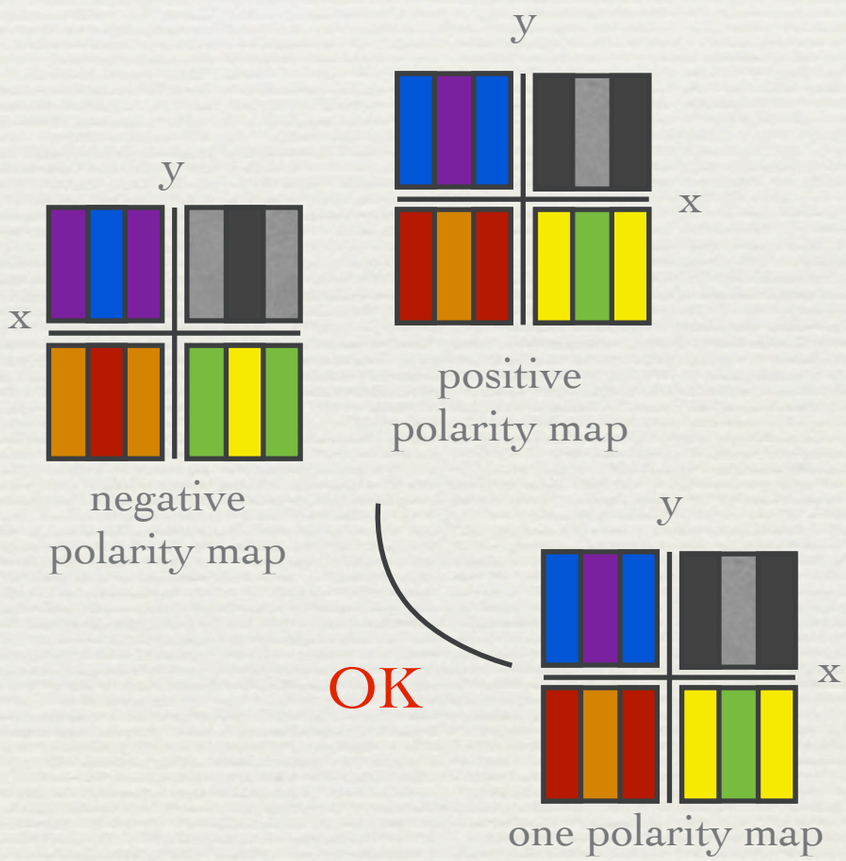
on behalf of the EPFL group

03-06-2010 Tracking and Alignment Workshop

one map - 4 quadrants

• We now have one map for describing both of the polarities. The signs of the field components are changed appropriately to describe both polarities.



• There are still 4 different quadrants.

• It has been shown that there is a asymmetry between the field of the upper and lower quadrants (included in Matt's talk next).

• It is thus impossible to use one unique map for all 4 quadrants.

• Whether we can use a left/right symmetry is under investigation.

one map - 4 quadrants

- The map is based on ***both*** positive and negative polarity measurements.

- The parametrisation method has not changed and has been described in
PPM: 10-05-2010; TeV Workshop: 28-01-2010; Internal note: LHCb-INT-2010-002

- For the ***downward*** polarity (*By* down) we have the maps: c*_onemap_down.cdf

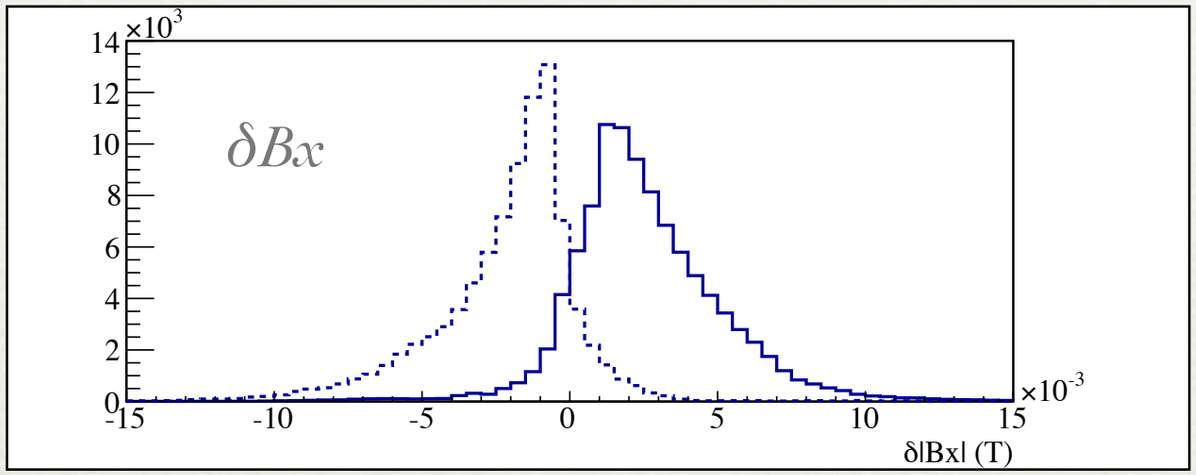
- For the ***upward*** polarity (*By* up) we have the maps: c*_onemap_up.cdf

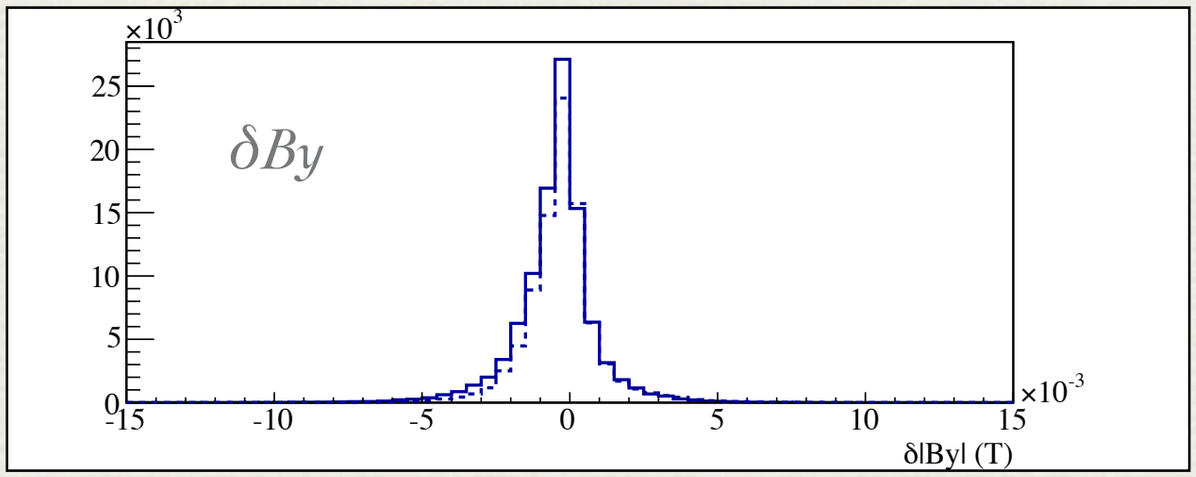
- Except for a sign change these maps are ***identical***.

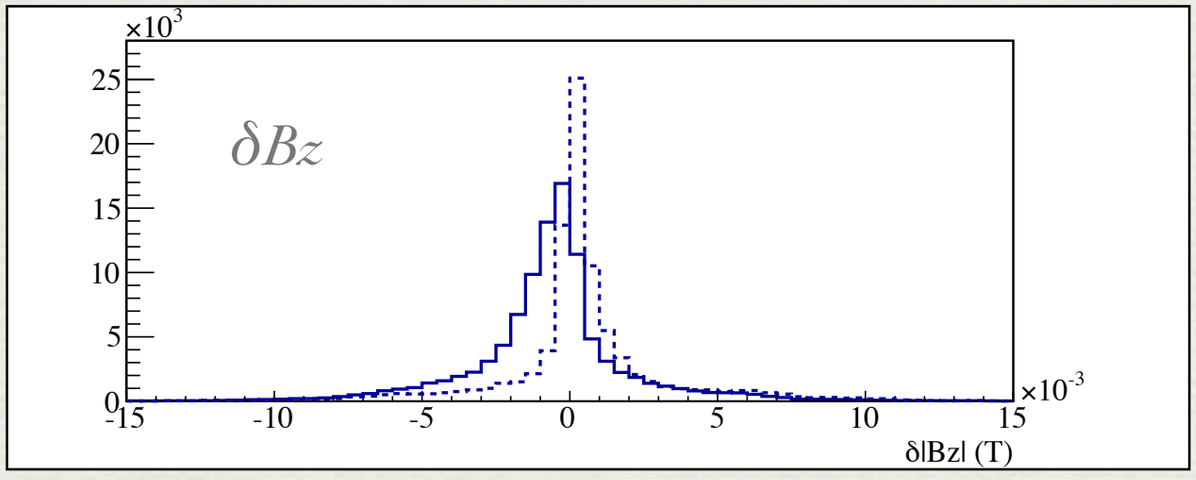
- The new field maps can be found in v5r4.

- These changes have been applied to: LHCBCOND 2009, 2010 data and SIMCOND 2010 data.

left/right (a)symmetry







- Plots show differences in upward polarity data measurements.

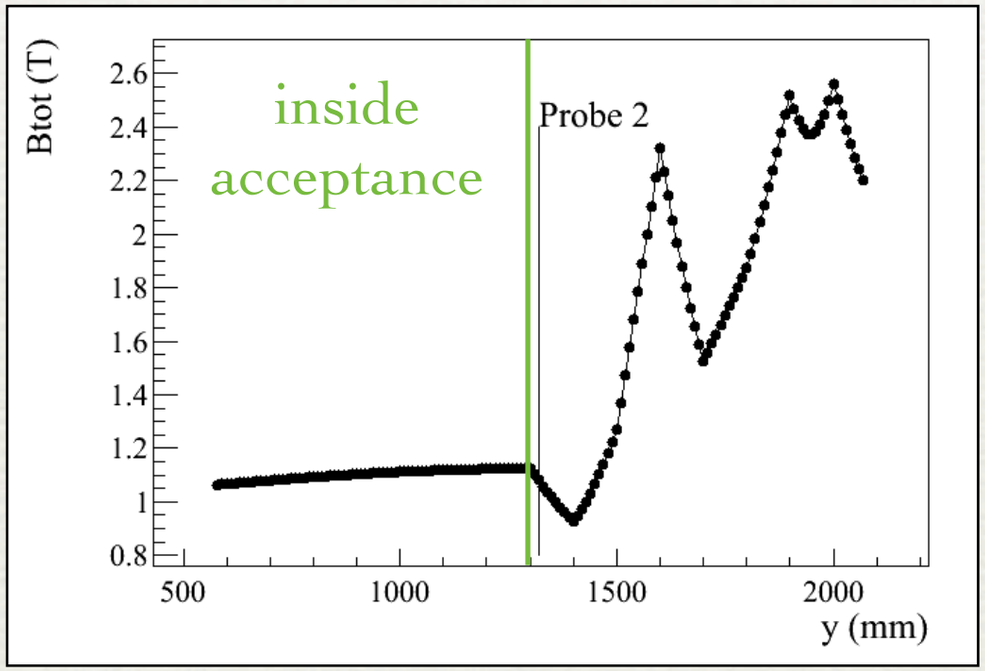
Q2	Q1
Q4	Q3

Solid line: Q1-Q2
Dashed line: Q3-Q4

- What the significance of these differences is, is being looked at.

outside acceptance issue

Jeroen v. Tilburg



- Tosca field unphysical outside acceptance region.

- By parametrising residuals (sim-meas) measured field map also unphysical.

- Measurements on their own (without the use of simulation values) need to be parametrised to better the field outside the acceptance region.

- An accurate result has not yet been achieved and this problem outside/on the edge of the acceptance region remains for now.

- Both this problem and the left/right (a)symmetry are works in progress.