

# Fieldmap Mouse-Hole

## New fieldmaps

### 2015

[125acm2\\_3kg\\_corrected\\_unfolded\\_scaled\\_0.7992\\_v2.tar.gz](#)

txt-to-dat command: `java -cp distribution/target/hps-distribution-4.1-SNAPSHOT-bin.jar org.hps.util.UnfoldFieldmap BmapCorrected3D_3k.txt 0.8`

[125acm2\\_3kg\\_corrected\\_unfolded\\_scaled\\_0.7992\\_v3.tar.gz](#)

with `fuzz=1e-10` (any field component with absolute value < fuzz is set to 0)

### 2016

[209acm2\\_5kg\\_corrected\\_unfolded\\_scaled\\_1.04545\\_v2.tar.gz](#)

txt-to-dat command: `java -cp distribution/target/hps-distribution-4.1-SNAPSHOT-bin.jar org.hps.util.UnfoldFieldmap BmapCorrected3D_5k.txt 1.0456`

[209acm2\\_5kg\\_corrected\\_unfolded\\_scaled\\_1.04545\\_v3.tar.gz](#)

with `fuzz=1e-10` (any field component with absolute value < fuzz is set to 0)

[209acm2\\_5kg\\_corrected\\_unfolded\\_scaled\\_1.04545\\_v4.tar.gz](#)

with `fuzz=1e-10`, and scientific notation precision of B component values set to 3

Some validation plots: [BfieldPlots209acm2\\_5kg.tar](#) (log plots use v2, linear plots use v3)

#### Things to check

- Symmetries of the seven octants into which the field map is expanded
- First derivatives along octant boundaries
- Smoothness of point where calculation and explicit field map measurements are merged (around  $z=1\text{m}$  in above plot)
- Make sure fields are renamed to preserve provenance.
- Make sure new fields are copied to all public locations
- Make sure all compact.xml files are modified and lodd files are regenerated.
- Check log files on new MC/recon/analysis production jobs to ensure new fields are being picked up and used.

Plots from the (correct) txt files: [Bfieldmap.pdf](#)

## Recon classes

### Accessing full field-map

- TrackDataDriver: By in extrapolation from Layer6 to ECal
- TrackUtils > extrapolateTrackUsingFieldMap: By

### Accessing at tracker centre

- TrackDataDriver: By for track intercepts with sensors
- SeedTracker: By
- BilliorVertexer: By
- MakeGblTracks: |B|
- TrackUtils >
  - extrapolateTrackPositionToSensor: By
  - getHelixPlaneIntercept: By
  - extrapolateTrack: By

## Recon studies affected

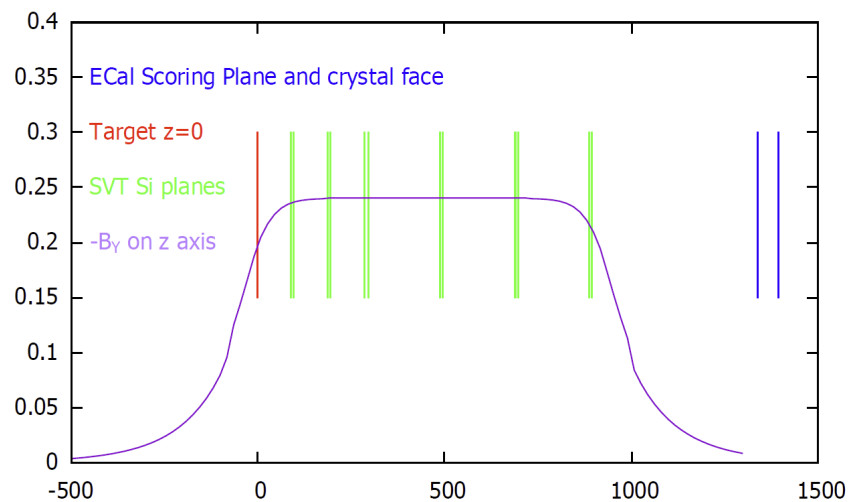
- Track extrapolation to ECal / track-cluster matching
- Top-bottom asymmetry
- Beam slope MC

## Analysis results affected

## MC samples requiring re-generation

### Old Field Map Plots

$B_y$  as a function of  $z$  along the  $z$  axis.



A few values from the old map:

$z=0$	$B_y = -0.19767$	0.824	~target
$z=90$	$B_y = -0.23610$	0.984	~L1
$z=400$	$B_y = -0.24000$	1.000	~L4
$z=900$	$B_y = -0.20907$	0.871	~L6

$z=1339$  ~ECal scoring plane

$z=1395$  ~Ecal crystal front face plane