KURRI analysis scripts

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KURRI related websites

Collaboration meetings: ffag.pp.rl.ac.uk/FFAG/colabo/

Experimental log and data (3/14 – 7/15): https://sites.google.com/site/kurriffag/home
(The data is stored on Google Drive).

Simulations codes and scripts: https://github.com/orgs/fixed-field-accelerator-simulation/teams/collaborators/repositories
(Includes repositories for analysis scripts, MAUS, OPAL, Scode and Zgoubi).

Analysis scripts (1)

git clone https://github.com/fixed-field-accelerator-simulation/KURRI_analysis_scripts.git

Analysis scripts (2)

| Script	Figures	Description
`analysedata.py`	-	Low level functions – e.g. read scope data, find peaks, fit data etc.
`qinbin*.py`	8	For each probe position calculate time of beam loss from bunch monitor signal.
`dispersion_analysis.py` `kvalue_analysis_poly.py` `orbit_analysis_150930.py`	9, 10, (11,12)	Following algorithm described in the paper, calculate field index and dispersion as a function of momentum. COD probably calculated in orbit_analysis. We probably only need one of these (to be determined).
`bpm20140326.py`	17, 18	Read BPM data and calculate relative position and tune.
`beamsize_160426.py`	13, 14	Use fall-off time of bunch monitor signal to estimate beam size.
-	20	Calculate dispersion at foil position.
-	22, 23	Measure tune using spectrum analyzer across momentum range.
-	24, 25	Foil thickness calculation based on beam capture in stationary bucket.

Scripts in the git repository and related figures in the PTEP paper.

CERN tomography code (1)

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- Code itself is written in Fortran 95. Based on algorithm devised by S. Hancock.

- Mathematica used for post-processing and graphical display. Most of the Mathematica functions failed to work – perhaps because it was written for an older version.
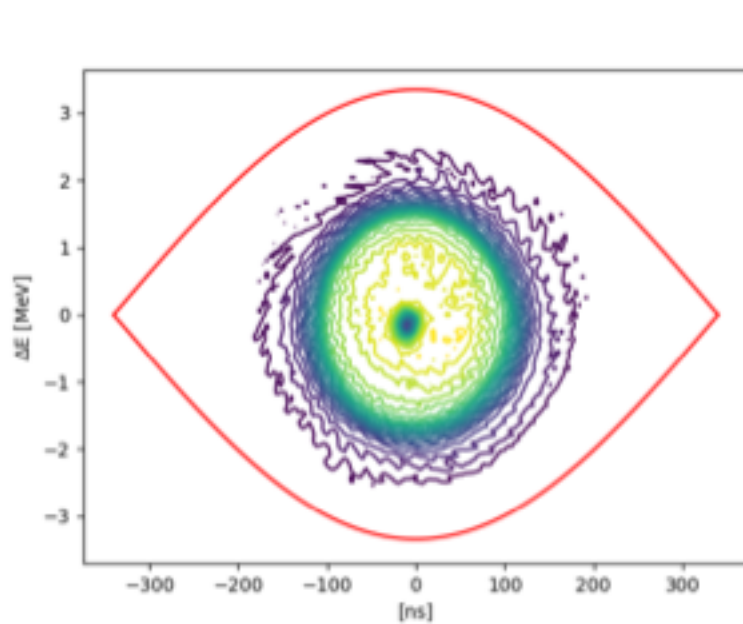
- Redo the post-processing in python.
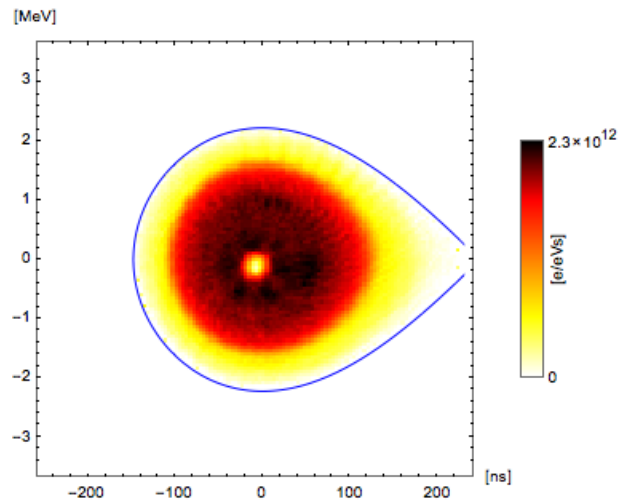
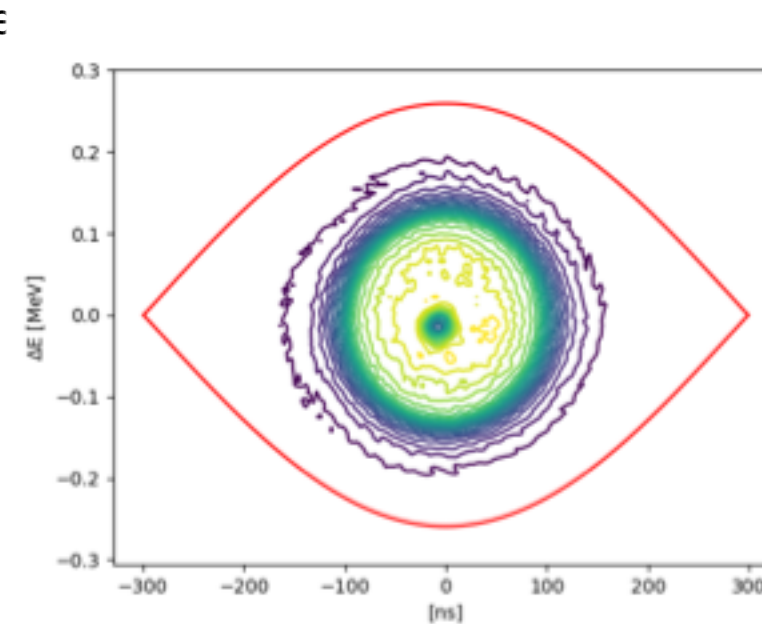
Original Mathematica example
(psbnotch.nb)
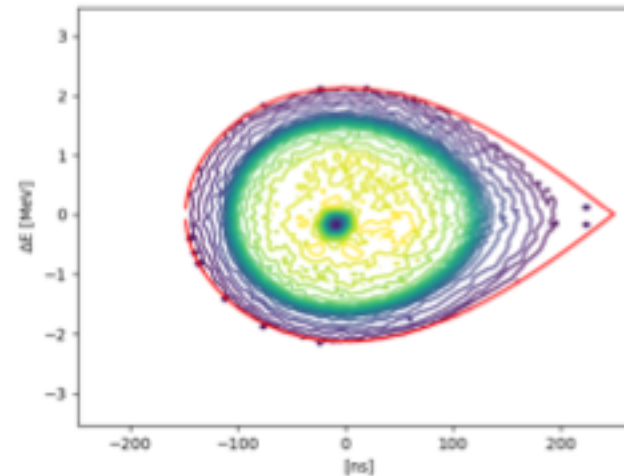
Python output.

CERN tomography code (2)

- Change dB/dt to zero to obtain stationary bucket. Use same data as in original example!

- Change parameters to those of the 150 MEV ring at KURRI but use the same input

Example case
Synch. tune:
0.0007

"KURRI" case
Synch. tune:
0.005