**Using phaseCalibrate.py**

1. Need all files in the folder Phase Calibrate, need python scipy and numpy libraries installed

ca.dll

Com.dll

msvcp120d.dll

msvcr120d.dll

EBT-INJ-DIA-BPMC-02

EBT-INJ-DIA-BPMC-04

EBT-INJ-DIA-BPMC-06

EBT-INJ-DIA-BPMC-10

EBT-INJ-DIA-BPMC-12

monitorInterface.py

phaseCalibrate.py

phaseCalibrateGUI.py

velaBPMGlobals.py

velaMagnetControl.pyd

velaRFControl.pyd

1. Open a command prompt AS AN ADMINISTRATOR
2. Navigate to Phase Calibrate folder (pushd \\fed.cclrc.ac.uk\Org\NLab\ASTeC\Projects\VELA\Software\Python\Phase Calibrate)
3. Type ‘python phaseCalibrate.py’
4. Wait until the gui opens (a few seconds)
5. Change settings and magnet control options (number of shots will make the program take longer but be more reliable) as needed in the Settings tab – some recommended options are entered already
6. Change to Main tab and click ‘Start’
7. Graph will eventually pop up with approximate fit using wall current monitor, close this to make the program continue
8. New graph will pop up with proper fit using BPM data – check this looks reasonable and then close to set the crest phase and continue (data from this stage will be saved in a file called data.txt)
9. Next the program will vary the amplitude to try and centre the beam in BPM04, another graph will pop up, close to continue
10. Finally close the gui to exit the program
11. SHOULD be at crest phase (or at the specified offset from crest) with the dipole set to the correct current for specified momentum and the beam centred in the BPM