```
Restart for cycle 2017-B
7/12/2017

Detector calibrations and recovery

95827 vanadium with some packs
95829 vamadium checking timing - reset all to interal
95830 vanadium checking timing - reset all to 500us minimum

Issues:
Pack 89 - seems to have a large preamp offset or missing low voltage
Pack 7 - timing is shifted ~500us

Did leak check - all OK

Recover again
95831 vanadium after vacuum leak check
95832 test for beam monitor 2

Vented and fixed detectors, pumping overnight

7/13/2017

Recover all detectors (one tube out)

95833 first vanadium 20meV
95834 T0 only check

Scan s2b, s2l - OK
In [8]: pwd
Out[8]: 'C:\\Desktop\\PythonScripts\\CAL\\2017-B\\calibration20170712'
In [9]: run -i Vanadium.py
Collimator already down, not making any changes.
setting slit2 to l=20 r=20 b=20 t=20
slit2 set
T0 only run  95835
95836 Vanadium cyl. 3cmx3cm 17.2g 300K Ch2 5meV 120Hz T0 30Hz coll DOWN
95837 Vanadium cyl. 3cmx3cm 17.2g 300K Ch2 8meV 180Hz T0 30Hz coll DOWN
95838 Vanadium cyl. 3cmx3cm 17.2g 300K Ch2 15meV 240Hz T0 60Hz coll DOWN
95839 Vanadium cyl. 3cmx3cm 17.2g 300K Ch2 30meV 300Hz T0 60Hz coll DOWN
95840 Vanadium cyl. 3cmx3cm 17.2g 300K Ch2 60meV 420Hz T0 60Hz coll DOWN
95841 Vanadium cyl. 3cmx3cm 17.2g 300K Ch2 100meV 600Hz T0 90Hz coll DOWN
95842 Vanadium cyl. 3cmx3cm 17.2g 300K Ch2 150meV 600Hz T0 90Hz coll DOWN
95843 Vanadium cyl. 3cmx3cm 17.2g 300K Ch2 200meV 600Hz T0 90Hz coll DOWN
95844 Vanadium cyl. 3cmx3cm 17.2g 300K Ch1 115meV 240Hz T0 90Hz coll DOWN
95845 Vanadium cyl. 3cmx3cm 17.2g 300K Ch1 175meV 300Hz T0 90Hz coll DOWN
95846 Vanadium cyl. 3cmx3cm 17.2g 300K Ch1 250meV 360Hz T0 90Hz coll DOWN
95847 Vanadium cyl. 3cmx3cm 17.2g 300K Ch1 350meV 420Hz T0 150Hz coll DOWN
95848 Vanadium cyl. 3cmx3cm 17.2g 300K Ch1 450meV 480Hz T0 150Hz coll DOWN
95849 Vanadium cyl. 3cmx3cm 17.2g 300K Ch1 570meV 540Hz T0 180Hz coll DOWN
95850 Vanadium cyl. 3cmx3cm 17.2g 300K Ch1 700meV 600Hz T0 180Hz coll DOWN
95851 Vanadium cyl. 3cmx3cm 17.2g 300K Ch1 1500meV 600Hz T0 180Hz coll DOWN


Mount vanadium rod 0.44" diameter on rotator thimble (called CCR12Rot in PyDas)
In [22]: run -i Detector_position_vanadium.py
Collimator already down, not making any changes.
Vanadium for detector location calibration
setting slit2 to l=20 r=20 b=5 t=5
slit2 set
95852 Vanadium on rotator 0deg Ch2 8meV 180Hz T0 60Hz coll DOWN

===> SimpleScan: Finished (Time: 1395.6 s)
===> Results saved to scan-2017-07-13-21-40-39.csv

95853 Vanadium on rotator 0deg Ch2 15meV 240Hz T0 60Hz coll DOWN

===> SimpleScan: Finished (Time: 1384.1 s)
===> Results saved to scan-2017-07-13-22-55-36.csv
Approx. sample center s2l = -3.0 for CCR12Rot=0

95854 Vanadium on rotator 45deg Ch2 8meV 180Hz T0 60Hz coll DOWN

===> SimpleScan: Finished (Time: 1409.6 s)
```

===> Results saved to scan-2017-07-14-00-10-20.csv

95855 Vanadium on rotator 45deg Ch2 15meV 240Hz T0 60Hz coll DOWN

===> SimpleScan: Finished (Time: 1385.8 s)
===> Results saved to scan-2017-07-14-01-25-15.csv
Approx. sample center s2l = -2.5 for CCR12Rot=45

95856 Vanadium on rotator 90deg Ch2 8meV 180Hz T0 60Hz coll DOWN

===> SimpleScan: Finished (Time: 1461.2 s)
===> Results saved to scan-2017-07-14-02-40-46.csv

95857 Vanadium on rotator 90deg Ch2 15meV 240Hz T0 60Hz coll DOWN

===> SimpleScan: Finished (Time: 1386.3 s)
===> Results saved to scan-2017-07-14-03-55-25.csv
Approx. sample center s2l = 1.0 for CCR12Rot=90

95858 Vanadium on rotator 135deg Ch2 8meV 180Hz T0 60Hz coll DOWN

===> SimpleScan: Finished (Time: 1388.0 s)
===> Results saved to scan-2017-07-14-05-10-08.csv

95859 Vanadium on rotator 135deg Ch2 15meV 240Hz T0 60Hz coll DOWN
*** HV trip probably during this run

7/14/2017
Trying to fix leak in get-lost-tube bellows

7/15/2017
Pressure down to 7e-6 Torr
95860 - dark counts after detector recovery

In [25]: run -i Detector_position_vanadium.py
Collimator already down, not making any changes.
Vanadium for detector location calibration
setting slit2 to l=15 r=15 b=5 t=5
slit2 set

95861 Vanadium on rotator 0deg Ch2 60meV 420Hz T0 30Hz coll DOWN
95862 Vanadium on rotator 0deg Ch2 15meV 240Hz T0 30Hz coll DOWN
===> SimpleScan: Finished (Time: 1063.0 s)
===> Results saved to scan-2017-07-15-12-36-17.csv
Approx. sample center s2l = 2.0 for CCR12Rot=0

95863 Vanadium on rotator 45deg Ch2 60meV 420Hz T0 30Hz coll DOWN
95864 Vanadium on rotator 45deg Ch2 15meV 240Hz T0 30Hz coll DOWN
===> SimpleScan: Finished (Time: 1058.9 s)
===> Results saved to scan-2017-07-15-15-20-30.csv
Approx. sample center s2l = 0 for CCR12Rot=45

95865 Vanadium on rotator 90deg Ch2 60meV 420Hz T0 30Hz coll DOWN
95866 Vanadium on rotator 90deg Ch2 15meV 240Hz T0 30Hz coll DOWN
===> SimpleScan: Finished (Time: 1052.5 s)
===> Results saved to scan-2017-07-15-18-04-08.csv
Approx. sample center s2l = -1.0 for CCR12Rot=90

95867 Vanadium on rotator 135deg Ch2 60meV 420Hz T0 30Hz coll DOWN
95868 Vanadium on rotator 135deg Ch2 15meV 240Hz T0 30Hz coll DOWN
===> SimpleScan: Finished (Time: 1057.6 s)
===> Results saved to scan-2017-07-15-20-52-58.csv
Approx. sample center s2l = -2.5 for CCR12Rot=135

95869 Vanadium on rotator 180deg Ch2 60meV 420Hz T0 30Hz coll DOWN
95870 Vanadium on rotator 180deg Ch2 15meV 240Hz T0 30Hz coll DOWN
===> SimpleScan: Finished (Time: 1055.6 s)
===> Results saved to scan-2017-07-15-23-38-18.csv
Approx. sample center s2l = -2.25 for CCR12Rot=180

95871 Vanadium on rotator 225deg Ch2 60meV 420Hz T0 30Hz coll DOWN
95872 Vanadium on rotator 225deg Ch2 15meV 240Hz T0 30Hz coll DOWN
===> SimpleScan: Finished (Time: 1060.1 s)
===> Results saved to scan-2017-07-16-02-22-31.csv

```
Approx. sample center s2l = 0 for CCR12Rot=225

95873 Vanadium on rotator 270deg Ch2 60meV 420Hz T0 30Hz coll DOWN
95874 Vanadium on rotator 270deg Ch2 15meV 240Hz T0 30Hz coll DOWN
===> SimpleScan: Finished (Time: 1055.0 s)
===> Results saved to scan-2017-07-16-05-06-19.csv
Approx. sample center s2l = 1.75 for CCR12Rot=270

95875 Vanadium on rotator 315deg Ch2 60meV 420Hz T0 30Hz coll DOWN
95876 Vanadium on rotator 315deg Ch2 15meV 240Hz T0 30Hz coll DOWN
===> SimpleScan: Finished (Time: 1059.0 s)
===> Results saved to scan-2017-07-16-07-51-52.csv
Approx. sample center s2l = 3.0 for CCR12Rot=315



95877 T0 only run Vanadium rod 0.44" 1cm vertical slit 1C

In [27]: set_slits(7,-3,5,5)
setting slit2 to l=7 r=-3 b=5 t=5

95878 T0 only 1cm X1cm slits 300meV

In [30]: set_slits(5,5,5,5)
setting slit2 to l=5 r=5 b=5 t=5

95879 T0 only 1cmX1cm beam 120meV 0.1C

set_white_beam()
95880 white beam 1cmX1cm beam
95881 white beam 1cmX1cm beam 0.14C

Mount C60 in flat aluminum cell on stick ~perp to beam

In [35]: run -i C60.py
Collimator already down, not making any changes.
setting slit2 to l=5 r=5 b=5 t=5
slit2 set
C60 diffraction runs - T0 only
95884 C60 flat Al plate 1cmX1cm slits T0 only 120meV das.pcharge>3.2e12
Current chopper speed: 30.0
White beam mode enabled, current t-zero speed:  30.0
95885 C60 flat Al plate 1cmX1cm slits white beam das.pcharge>3.2e12
Monochromatic Mode restored
95886 C60 flat Al plate 1cmX1cm slits T0 only 120meV das.pcharge>3.2e12
Current chopper speed: 30.0
White beam mode enabled, current t-zero speed:  29.0
95887 C60 flat Al plate 1cmX1cm slits white beam das.pcharge>3.2e12
Monochromatic Mode restored
95888 C60 flat Al plate 1cmX1cm slits T0 only 120meV das.pcharge>3.2e12
Current chopper speed: 30.0
White beam mode enabled, current t-zero speed:  30.0
95889 C60 flat Al plate 1cmX1cm slits white beam das.pcharge>3.2e12
Monochromatic Mode restored
95890 C60 flat Al plate 1cmX1cm slits T0 only 120meV das.pcharge>3.2e12
Current chopper speed: 30.0
White beam mode enabled, current t-zero speed:  29.0
95891 C60 flat Al plate 1cmX1cm slits white beam das.pcharge>3.2e12

Mount Diamond powder in vanadium can (4mm)

In [36]: run -i Diamond.py
Collimator already down, not making any changes.
setting slit2 to l=5 r=5 b=5 t=5
slit2 set
Diamond diffraction runs - T0 only
95892 Diamond vanadium can 1cmX1cm slits T0 only 120meV das.pcharge>3.2e12
Current chopper speed: 30.0
White beam mode enabled, current t-zero speed:  29.0
95893 Diamond vanadium can 1cmX1cm slits white beam das.pcharge>3.2e12
Monochromatic Mode restored
95894 Diamond vanadium can 1cmX1cm slits T0 only 120meV das.pcharge>3.2e12
Current chopper speed: 30.0
```

```
White beam mode enabled, current t-zero speed:  29.0
95895 Diamond vanadium can 1cmX1cm slits white beam das.pcharge>3.2e12
Monochromatic Mode restored
95896 Diamond vanadium can 1cmX1cm slits T0 only 120meV das.pcharge>3.2e12
Current chopper speed: 30.0
White beam mode enabled, current t-zero speed:  30.0
95897 Diamond vanadium can 1cmX1cm slits white beam das.pcharge>3.2e12
Monochromatic Mode restored
95898 Diamond vanadium can 1cmX1cm slits T0 only 120meV das.pcharge>3.2e12
Current chopper speed: 30.0
White beam mode enabled, current t-zero speed:  30.0
95899 Diamond vanadium can 1cmX1cm slits white beam das.pcharge>3.2e12
Monochromatic Mode restored
95900 Diamond vanadium can 1cmX1cm slits T0 only 120meV das.pcharge>3.2e12
Current chopper speed: 30.0
White beam mode enabled, current t-zero speed:  30.0
95901 Diamond vanadium can 1cmX1cm slits white beam das.pcharge>3.2e12
```

Monohromatic diamond (same as vanadium runs) to check centering

```
In [39]: run -i Detector_position_diamond.py
Collimator already down, not making any changes.
Diamond for detector location calibration
setting slit2 to l=15 r=15 b=5 t=5
slit2 set
95902 Diamond on rotator 0deg Ch2 60meV 420Hz T0 30Hz coll DOWN
95903 Diamond on rotator 0deg Ch2 15meV 240Hz T0 30Hz coll DOWN
===> SimpleScan: Finished (Time: 1064.9 s)
===> Results saved to scan-2017-07-17-09-38-21.csv
Approx. sample center s2l = 1.5 for CCR12Rot=0

95904 Diamond on rotator 45deg Ch2 60meV 420Hz T0 30Hz coll DOWN
95905 Diamond on rotator 45deg Ch2 15meV 240Hz T0 30Hz coll DOWN
===> SimpleScan: Finished (Time: 1113.8 s)
===> Results saved to scan-2017-07-17-10-17-01.csv
Approx. sample center s2l = 1.5 for CCR12Rot=45

95906 Diamond on rotator 90deg Ch2 60meV 420Hz T0 30Hz coll DOWN
95907 Diamond on rotator 90deg Ch2 15meV 240Hz T0 30Hz coll DOWN
===> SimpleScan: Finished (Time: 1083.5 s)
===> Results saved to scan-2017-07-17-10-55-06.csv
Approx. sample center s2l = 1.0 for CCR12Rot=90

95908 Diamond on rotator 135deg Ch2 60meV 420Hz T0 30Hz coll DOWN
95909 Diamond on rotator 135deg Ch2 15meV 240Hz T0 30Hz coll DOWN
===> SimpleScan: Finished (Time: 1064.3 s)
===> Results saved to scan-2017-07-17-11-32-52.csv
Approx. sample center s2l = 0.75 for CCR12Rot=135

95910 Diamond on rotator 180deg Ch2 60meV 420Hz T0 30Hz coll DOWN
95911 Diamond on rotator 180deg Ch2 15meV 240Hz T0 30Hz coll DOWN
===> SimpleScan: Finished (Time: 1054.8 s)
===> Results saved to scan-2017-07-17-12-10-21.csv
Approx. sample center s2l = 0.0 for CCR12Rot=180

95912 Diamond on rotator 225deg Ch2 60meV 420Hz T0 30Hz coll DOWN
95913 Diamond on rotator 225deg Ch2 15meV 240Hz T0 30Hz coll DOWN
===> SimpleScan: Finished (Time: 1050.0 s)
===> Results saved to scan-2017-07-17-12-47-55.csv
Approx. sample center s2l = -0.25 for CCR12Rot=225

95914 Diamond on rotator 270deg Ch2 60meV 420Hz T0 30Hz coll DOWN
95915 Diamond on rotator 270deg Ch2 15meV 240Hz T0 30Hz coll DOWN
===> SimpleScan: Finished (Time: 1051.2 s)
===> Results saved to scan-2017-07-17-13-25-26.csv
Approx. sample center s2l = 0.0 for CCR12Rot=270

95916 Diamond on rotator 315deg Ch2 60meV 420Hz T0 30Hz coll DOWN
95917 Diamond on rotator 315deg Ch2 15meV 240Hz T0 30Hz coll DOWN
===> SimpleScan: Finished (Time: 1058.2 s)
===> Results saved to scan-2017-07-17-14-03-09.csv
Approx. sample center s2l = 0.5 for CCR12Rot=315
```

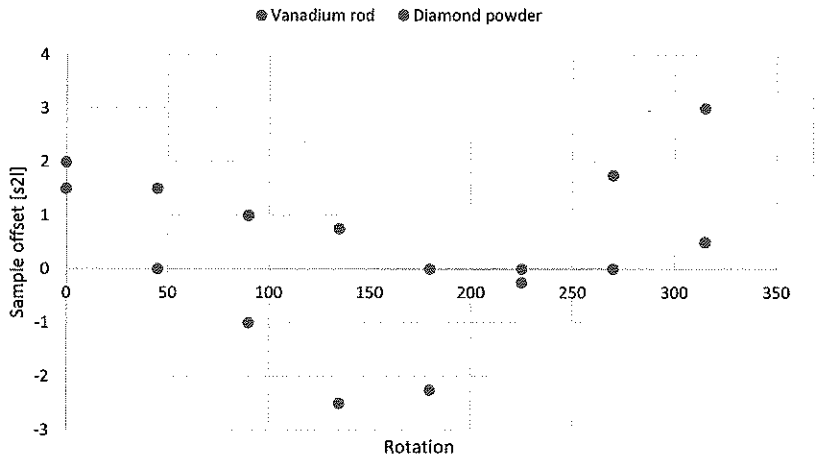
7/17/2017
End commissioning runs for now
IPTS-19579

Vanadium rod

Rot	offset
0	2
45	0
90	-1
135	-2.5
180	-2.25
225	0
270	1.75
315	3

Diamond powder

Rot	offset
0	1.5
45	1.5
90	1
135	0.75
180	0
225	-0.25
270	0
315	0.5



IPTS-19579 Calibration
7/20/2017

95980 Natrolite xtal CCR12Rot white beam
ITEMS #45648 Na2Al2Si3O10.2H2O 5g 4mm sphere
Lattice: 18.67, 18.21, 6.59, 90,90,90

In [36]: run -i Natrolite_rotations.py
Collimator already down, not making any changes.
Natrolite (Corelli) for detector location calibration
setting slit2 to l=10 r=10 b=0 t=8
slit2 set
Current chopper speed: 28.0
White beam mode enabled, current t-zero speed: 28.0

Coarse angle scan

95981 Natrolite CCR12Rot white beam 0deg das.pcharge>0.1e12
===> SimpleScan: Finished (Time: 571.5 s)
===> Results saved to scan-2017-07-20-10-56-27.csv 0.5
95982 Natrolite CCR12Rot white beam 45deg das.pcharge>0.1e12
===> SimpleScan: Finished (Time: 590.0 s)
===> Results saved to scan-2017-07-20-11-08-31.csv 2.5
95983 Natrolite CCR12Rot white beam 90deg das.pcharge>0.1e12
===> SimpleScan: Finished (Time: 566.3 s)
===> Results saved to scan-2017-07-20-11-20-10.csv 4.0
95984 Natrolite CCR12Rot white beam 135deg das.pcharge>0.1e12
===> SimpleScan: Finished (Time: 567.7 s)
===> Results saved to scan-2017-07-20-11-31-51.csv 4.25
95985 Natrolite CCR12Rot white beam 180deg das.pcharge>0.1e12
===> SimpleScan: Finished (Time: 571.6 s)
===> Results saved to scan-2017-07-20-11-43-37.csv 2.75
95986 Natrolite CCR12Rot white beam 225deg das.pcharge>0.1e12
===> SimpleScan: Finished (Time: 566.8 s)
===> Results saved to scan-2017-07-20-11-55-20.csv 1.25
95987 Natrolite CCR12Rot white beam 270deg das.pcharge>0.1e12
===> SimpleScan: Finished (Time: 567.3 s) -1.0
===> Results saved to scan-2017-07-20-12-07-01.csv
95988 Natrolite CCR12Rot white beam 315deg das.pcharge>0.1e12
===> SimpleScan: Finished (Time: 564.7 s)
===> Results saved to scan-2017-07-20-12-18-40.csv -0.75

Finer angle scan

95989 Natrolite CCR12Rot white beam 0deg das.pcharge>0.5e12 (~7 min. at 1.2MW)
95990 Natrolite CCR12Rot white beam 3deg das.pcharge>0.5e12
95991 Natrolite CCR12Rot white beam 6deg das.pcharge>0.5e12
95992 Natrolite CCR12Rot white beam 9deg das.pcharge>0.5e12
95993 Natrolite CCR12Rot white beam 12deg das.pcharge>0.5e12
95994 Natrolite CCR12Rot white beam 15deg das.pcharge>0.5e12
95995 Natrolite CCR12Rot white beam 18deg das.pcharge>0.5e12
95996 Natrolite CCR12Rot white beam 21deg das.pcharge>0.5e12

End xtal measurements