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10/2/2019 Configuration of Cedrat shutter and spec macros for Lambda operation

Today, Suresh helped me with switching the operation of the beamline electronics (SK Ross 1U box) to invert the TTL signal with softGlue. Now the SR Ross box output goes in SoftGlue In3, gets inverted, and from Out 5 gets fed to ESA BNC 5 and connected to the Cedrat shutter. Showbeam and blockbeam are now working again.

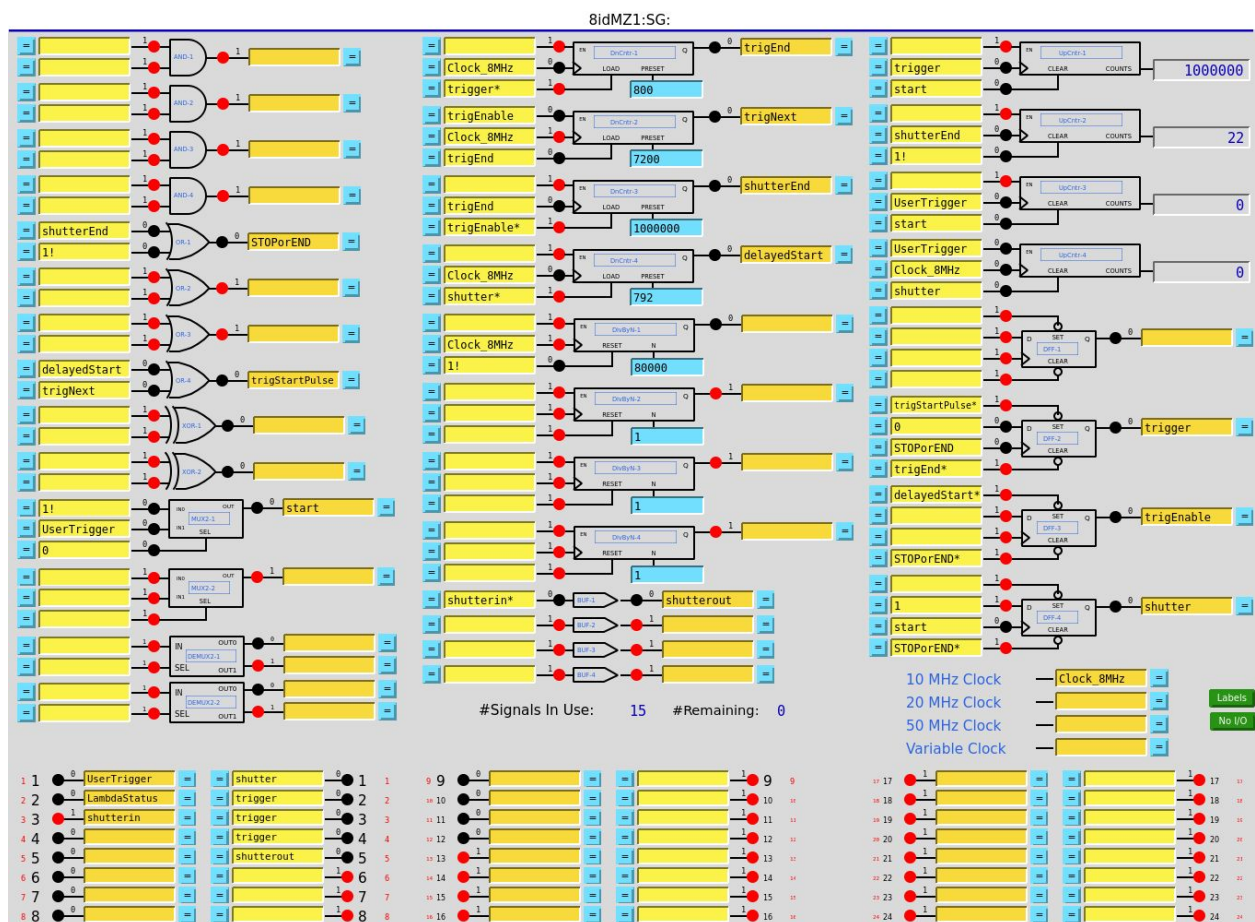


Figure 10-2-19-1 SoftGlue inverting circuit (see references to shutterin, shutterout)

Two things were broken from the shutdown. A new matlab 2018b was installed on pepper, so Suresh found I had forgotten to include the /APSshare/epics/ paths for mca support. Now 8idigui works with Lambda 250k again. Gridftp was also not working because of the change to NetApp by Dave Wallis. Suresh quickly identified the problem by changing the ftp address to ftp://s8idedm:2838/export/8-id-e/ from s8iddata in file lambda\_macros.mac which is located in the batches directory.

The good news with the NetApp change is that /home/8-id-e has been resized from **4 to 10 TB!**  
 s8iddata:/export/8-id-e 10200547328 3798710848 6401836480 38% /home/8-id-e

10/3/2019 Analysis of overnight Cu3Au data and data collection on N. Mauro's sample.

On the night of 10/3, I ran a 5 hour long data collection with Lambda 250k, showing scattering from Cu3Au with att3, file is:

```
ls /home/8-id-e/2019-3/dufresne201910/A006_Cu3Au_att3_001/
```

```
A006_Cu3Au_att3_001_0001-3600.batchinfo A006_Cu3Au_att3_001.imm
```

Ran with padtimes 3600 5

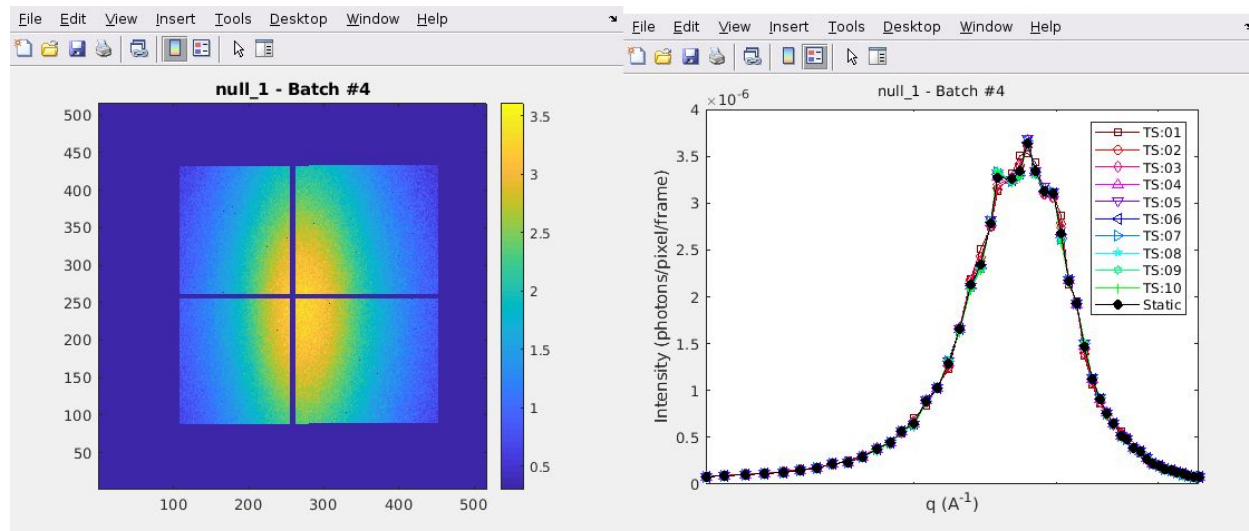


Figure 10-3-19-1: Time average (left) and stability plot (right)

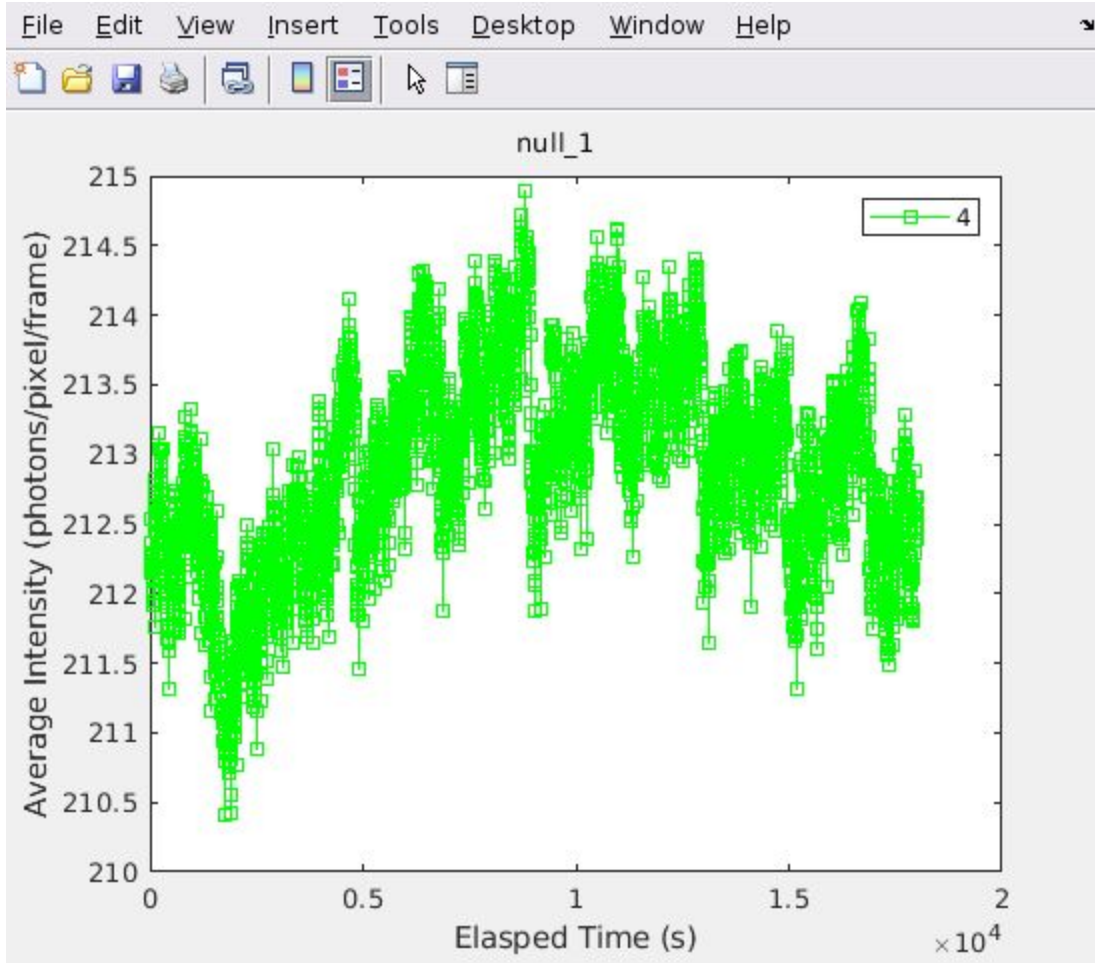


Figure 10-3-19-2 Total scattering vs time.

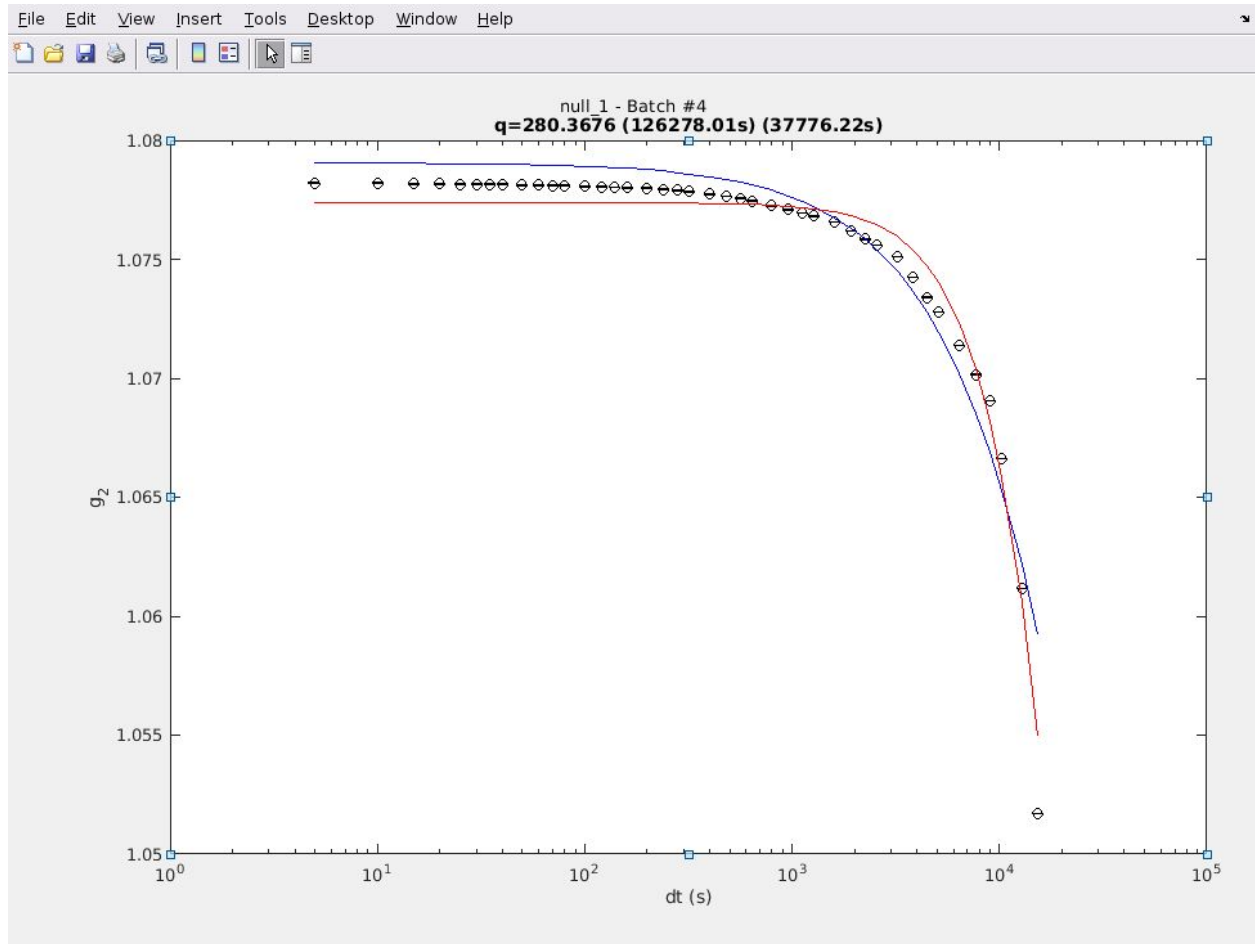


Figure 10-3-19-3 Multitau. Blue is exponential fit with a time constant of  $1.26 \times 10^5$ s.

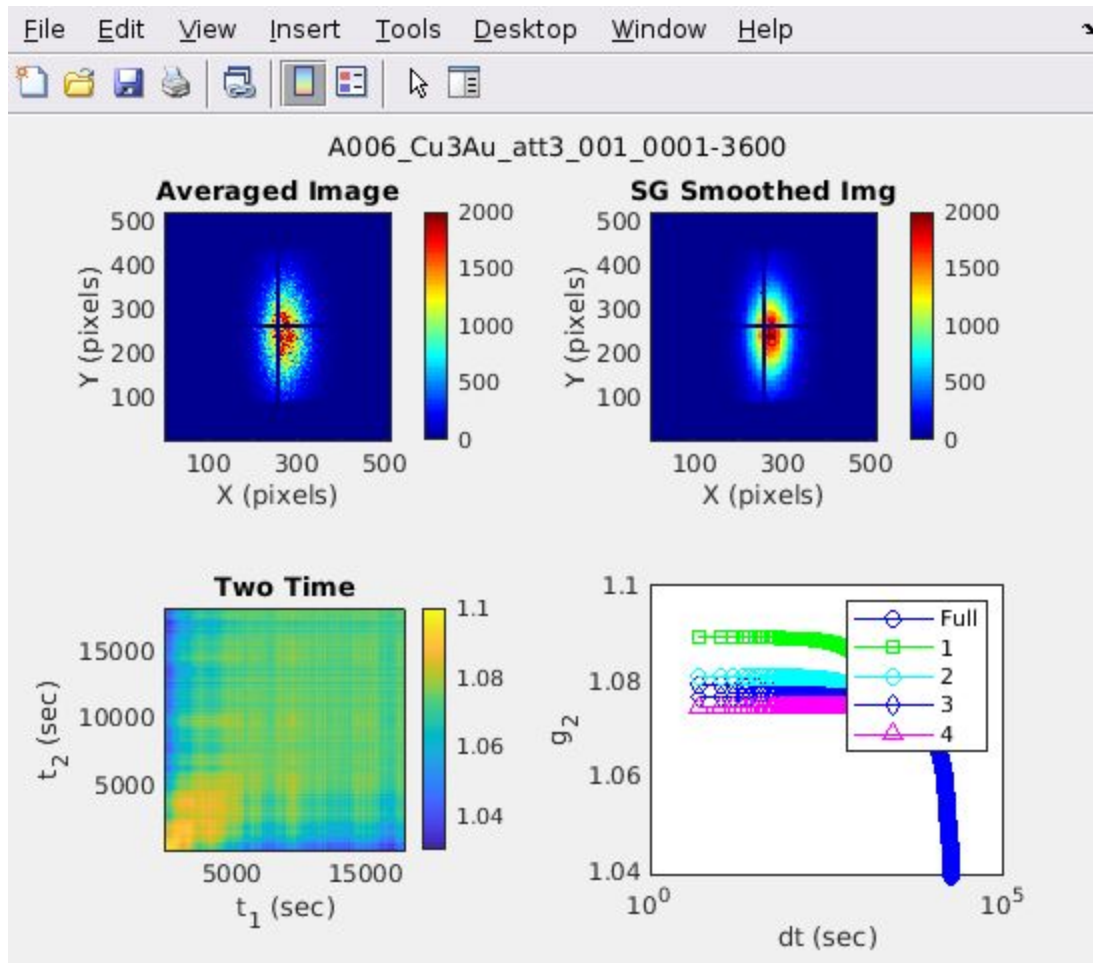


Figure 10-3-19-4 Two Time analysis plot. Note the 1st quarter of the data is the least stable (have to trust me here as the caption interferes).

Dillon Fong experiment Nov 29, 2019

Alignment of 8-ID-E for Dillon Fong experiment went well. I set the 8-ID-I mono at 7.37 keV. Unfortunately the machine top-up was broken from startup til 12h45. The flux was good when scaled with the ring current,  $1.01 \times 10^{10}$  ph/s. I carefully measured the lens transmission of 86.4% with pind3 with se1gaps = 150umx150um.

We struggled to do reflectivity first, but eventually, I used the Lambda with **att 16** to see the main beam. Then we can use ccdscans to lineup th and samz.

Late at night, Dillon's team crashed the se3 horizontal slit box on the sample stage Al bracket. It bent the metal casing of se3 and may have broken stuff on this axis. **Need to test.**

Date: Fri, 29 Nov 2019 22:33:31 -0600  
From: "Fong, Dillon D." <fong@anl.gov>  
To: "Dufresne, Eric" <dufresne@anl.gov>  
Cc: "Li, Yan" <yan.li@anl.gov>, "Zhu, Yisi" <yisi.zhu@anl.gov>  
Subject: update

Hi Eric,  
Don't bother coming back to Sector 8 — we are headed home.

We had a crash between a slit box on the tth and the furnace, so we need to reset the tth and th angles, which we do in the morning. Sorry about that — the slit box is **bent**.

Anyway, we will be back tomorrow.  
-- Dillon D. Fong

11/30/2019 Analysis of Cu<sub>3</sub>Au data from 11/29/19 A001-A003

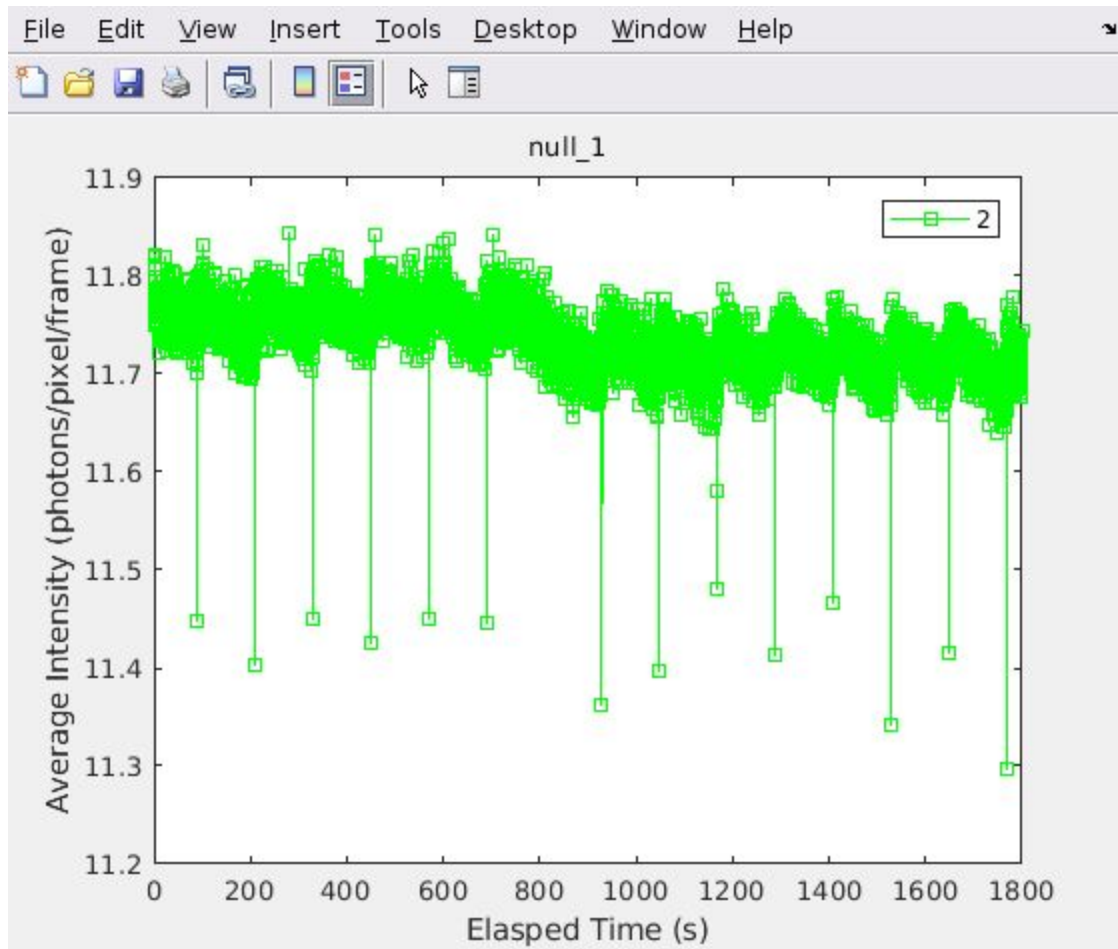


Fig 11-29-1 Neat top up filling of A002\_Cu3Au with 0.3s sampling

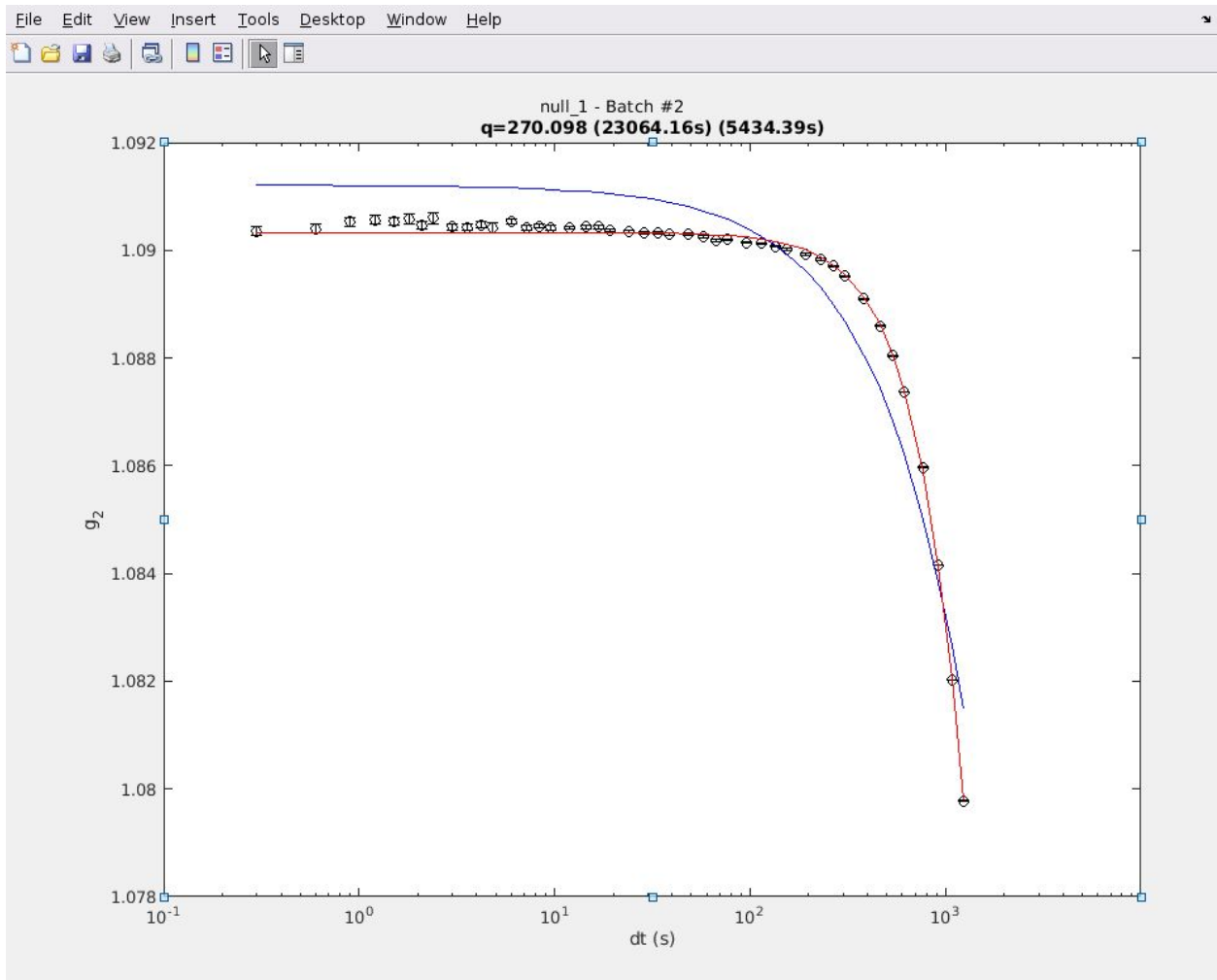


Figure 11-29-2  $G^2$  of A002\_Cu3Au 0.3 s sampling, 9% contrast.



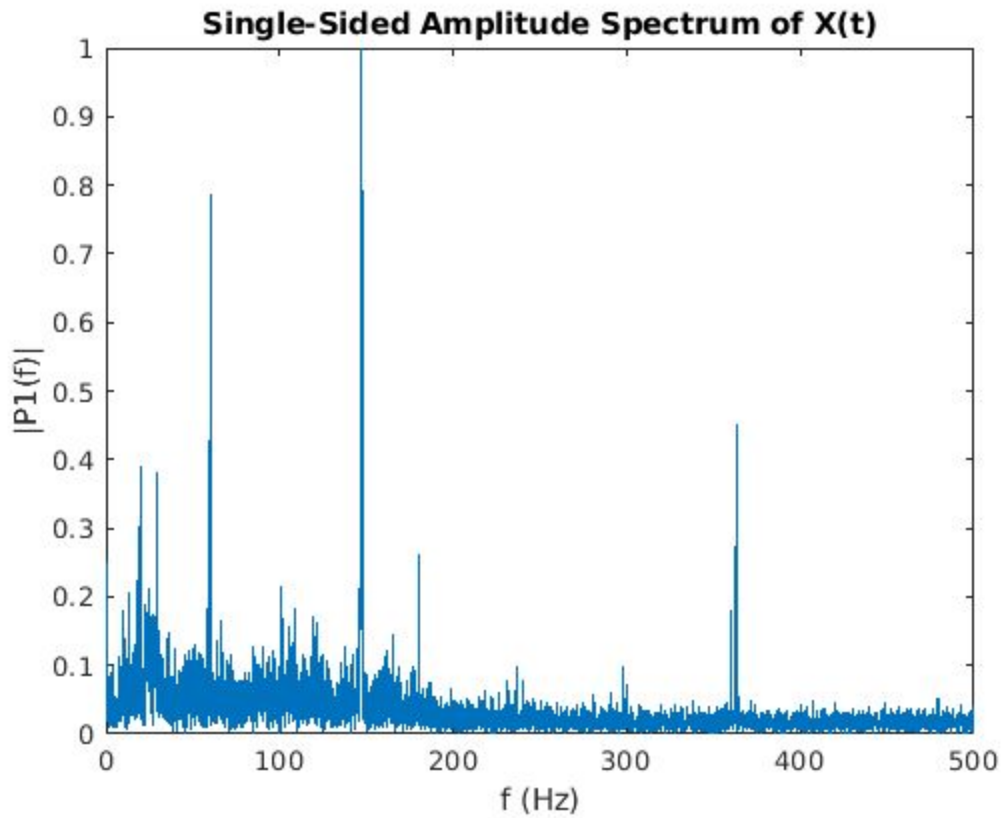
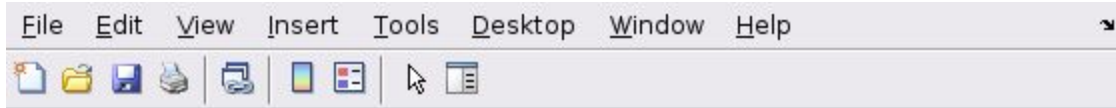


Fig 11-29-3 FFT of A003\_Cu3Au with 0.001 sampling. Same usual 60, 147, 360 Hz noise.

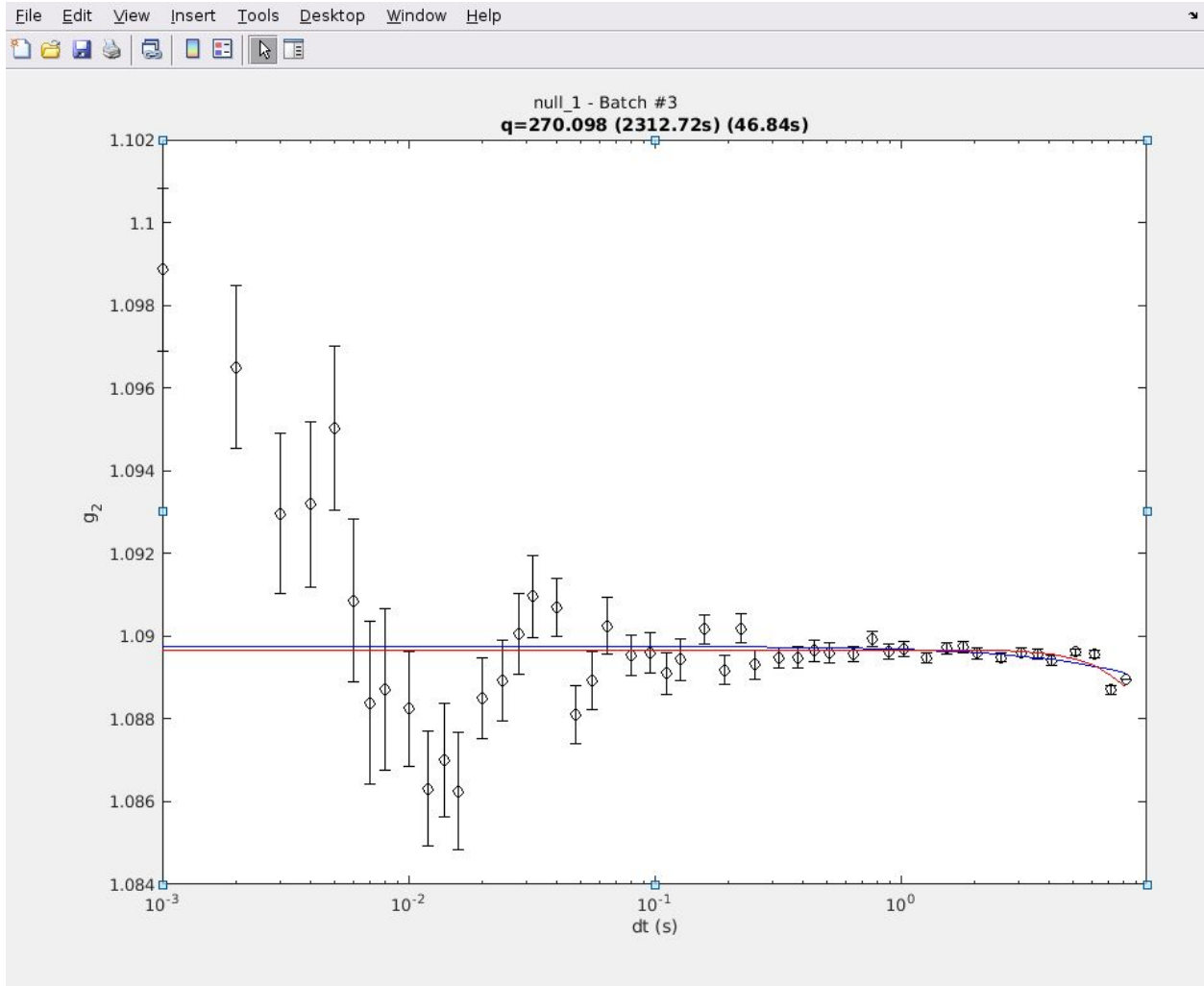


Figure 11-29-4 A003\_Cu3Au G2 Multitau showing we loose 1% contrast from this oscillation of the source.

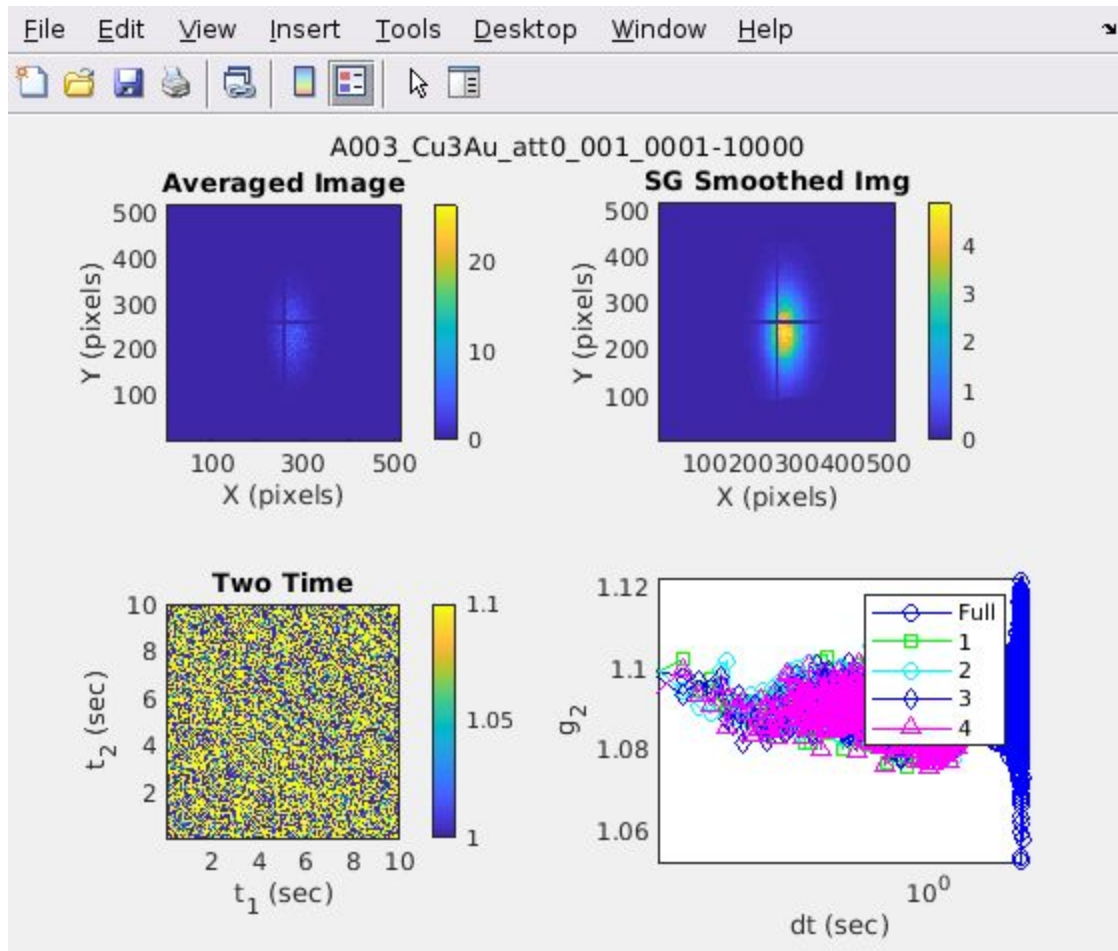


Figure 11-29-5 TwoTime plot from A003\_Cu3Au sampling at 0.001 s

11/30/19 First XPCS on 8-ID-E

Today, Zhang reported a problem with no data over night. The autoshutter control in 8-ID-A Engineering screen stopped working. We reenabled it.

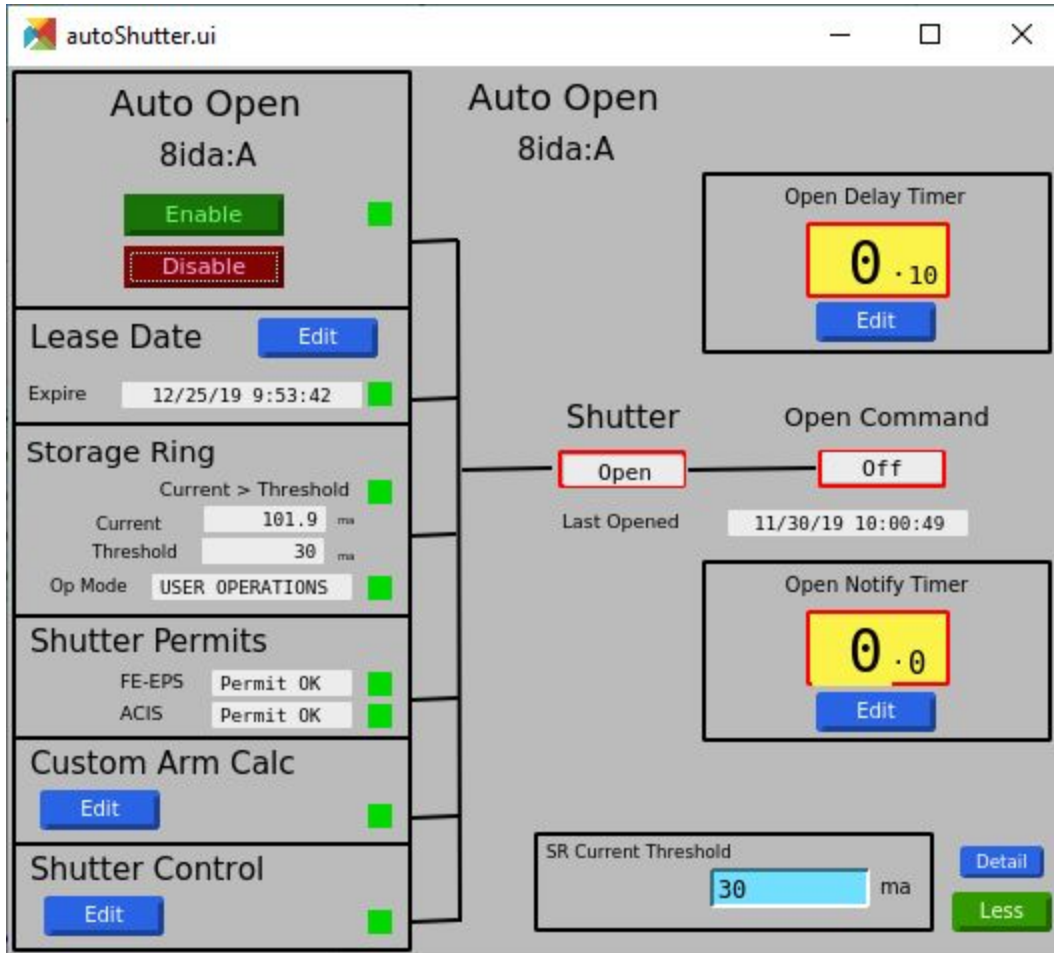


Figure 11-30-1 Auto open in 8-ID-A lease might have expired?

Post experiment to do list:

- 1) Check se3 horizontal motion
- 2) Need a better way to view the sample and pin
- 3)