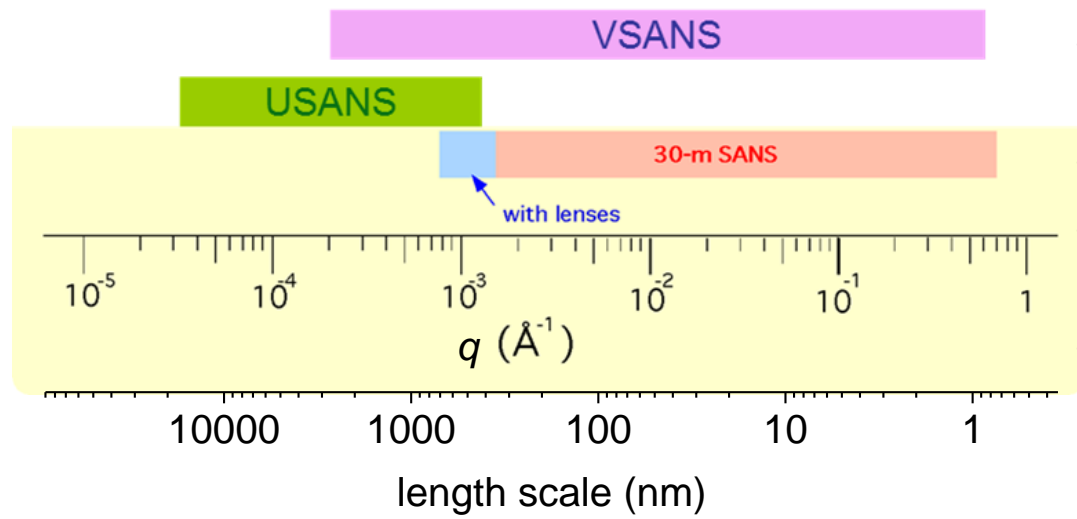


# A virtual tour of vSANS: Very Small-Angle Neutron Scattering Diffractometer

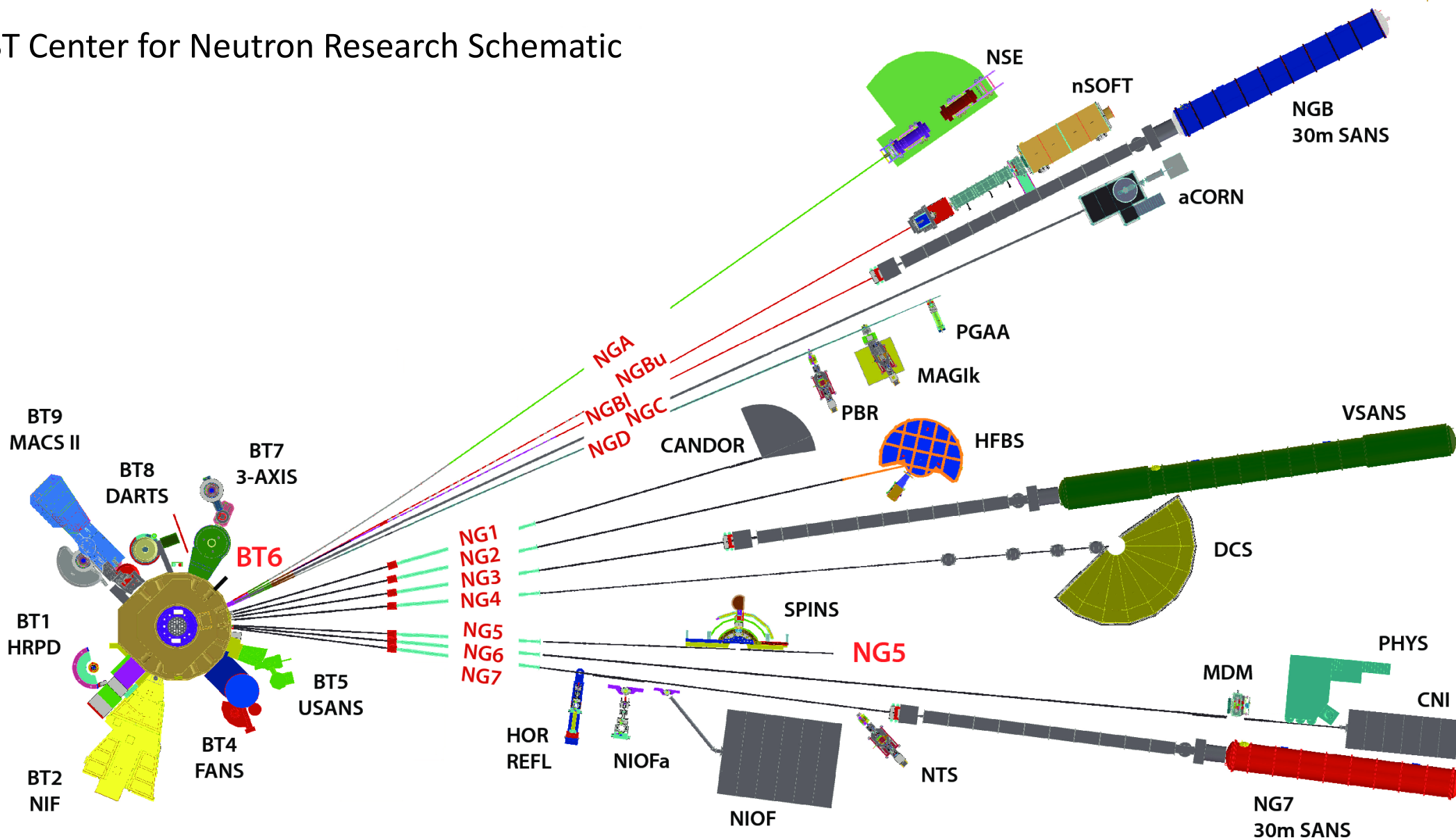
(<https://www.nist.gov/ncnr/chrns-vsans-very-small-angle-neutron-scattering>)

## Flexibility, $q$ range, and flux



- Higher neutron flux with new collimation choices
- Smaller scattering angles
- Wider *angle* range captured in one detector configuration
- 1,000 x faster than USANS

# NIST Center for Neutron Research Schematic





- Higher neutron flux
- Lower scattering angles (low  $q$ )
- Polarized beam

Wavelength options:  
White beam, velocity selector, or HOPG graphite polarized

Beam collimation options:  
Vertical slit, pinhole, converging apertures, guide field

Lenses and prisms

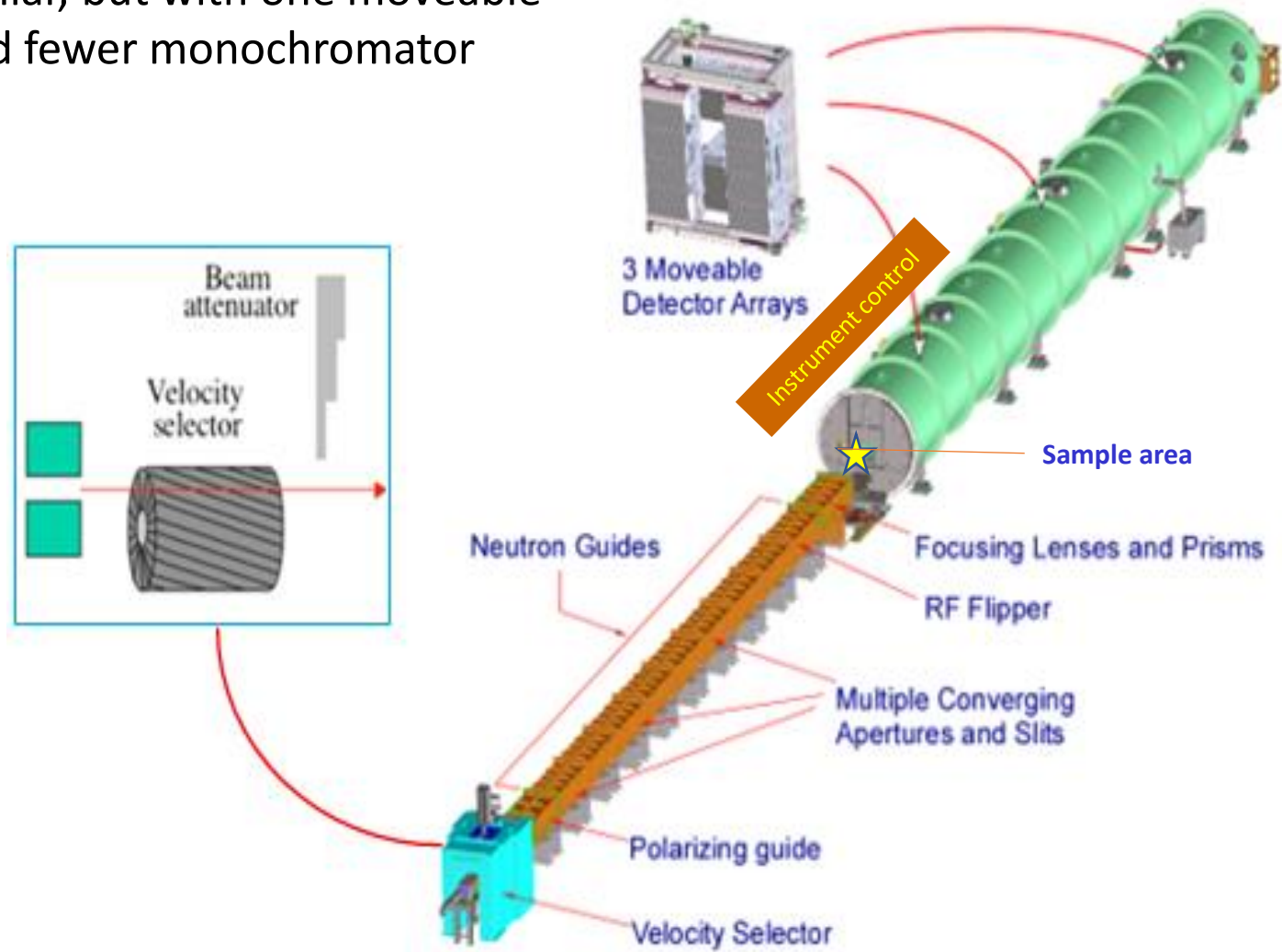
Larger (2m) sample area

Three movable detector carriages; Two w.  $^3\text{He}$  tube panels, one high resolution



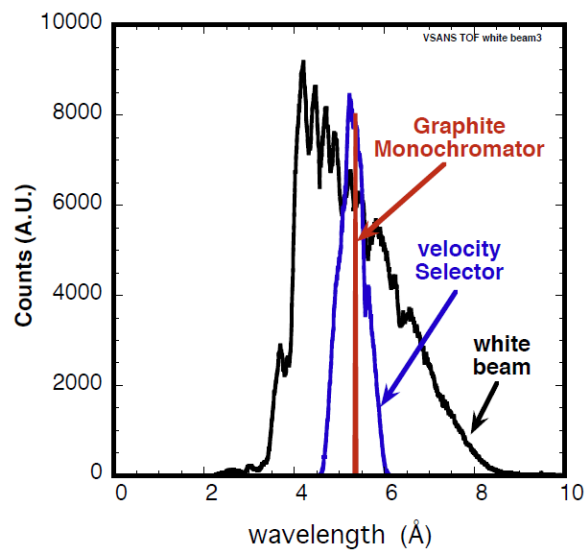
## vSANS

(SANS is similar, but with one moveable detector and fewer monochromator options)

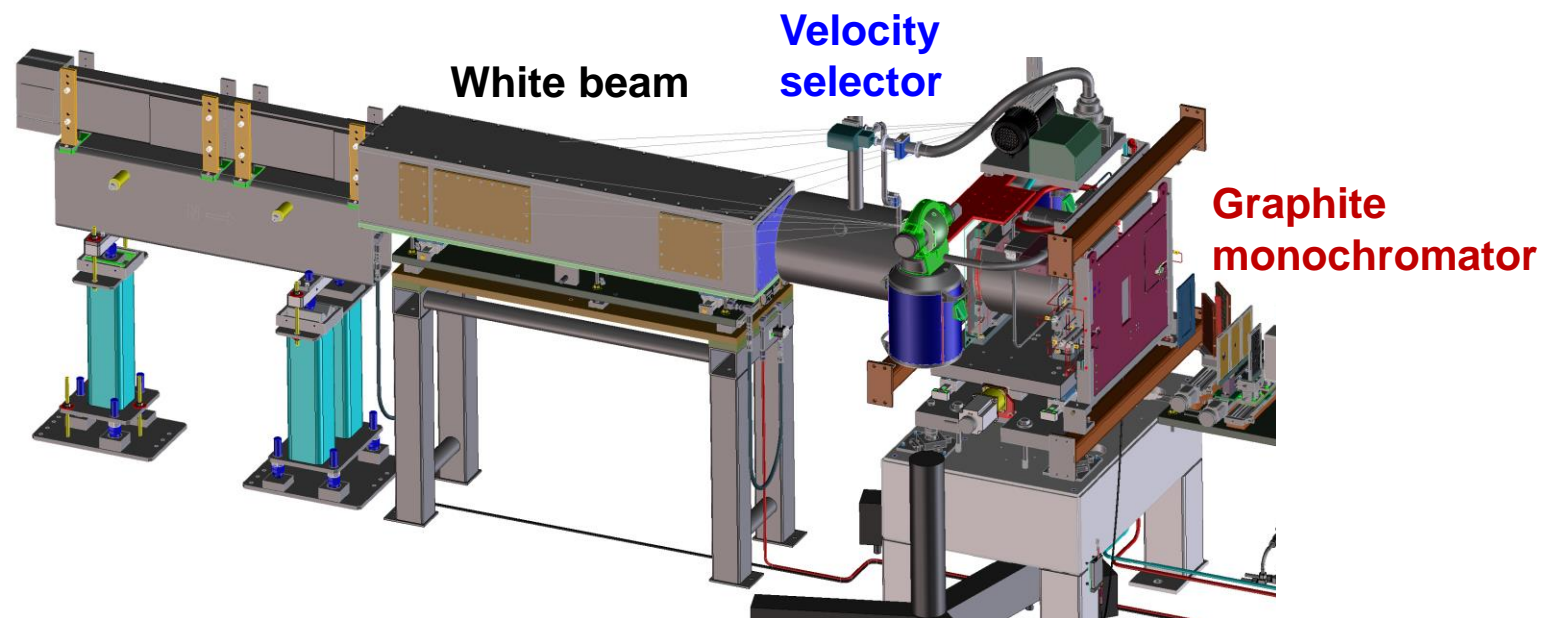




# White beam, velocity selector or HOPG Graphite:

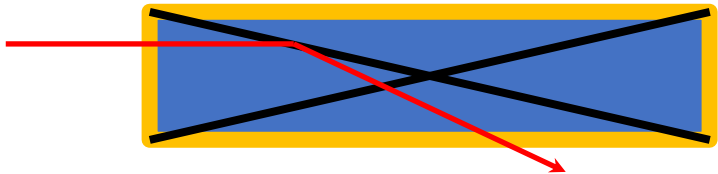


Type	Intensity
“White”	4x
Selector	1
Graphite	1/12 x



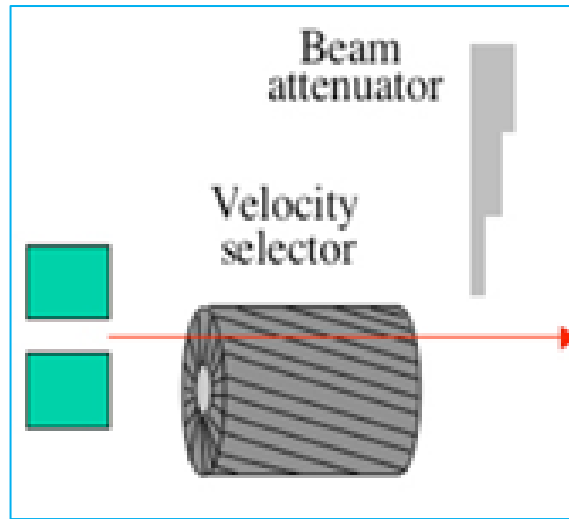
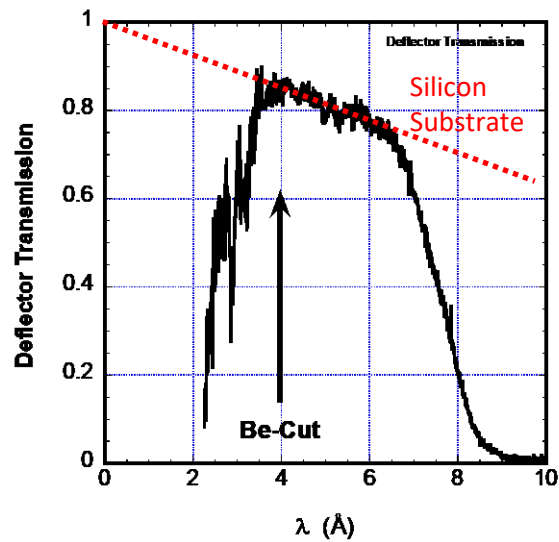
# Monochromator options:

White Beam: Be filter (not shown) & "X" Mirror Deflector

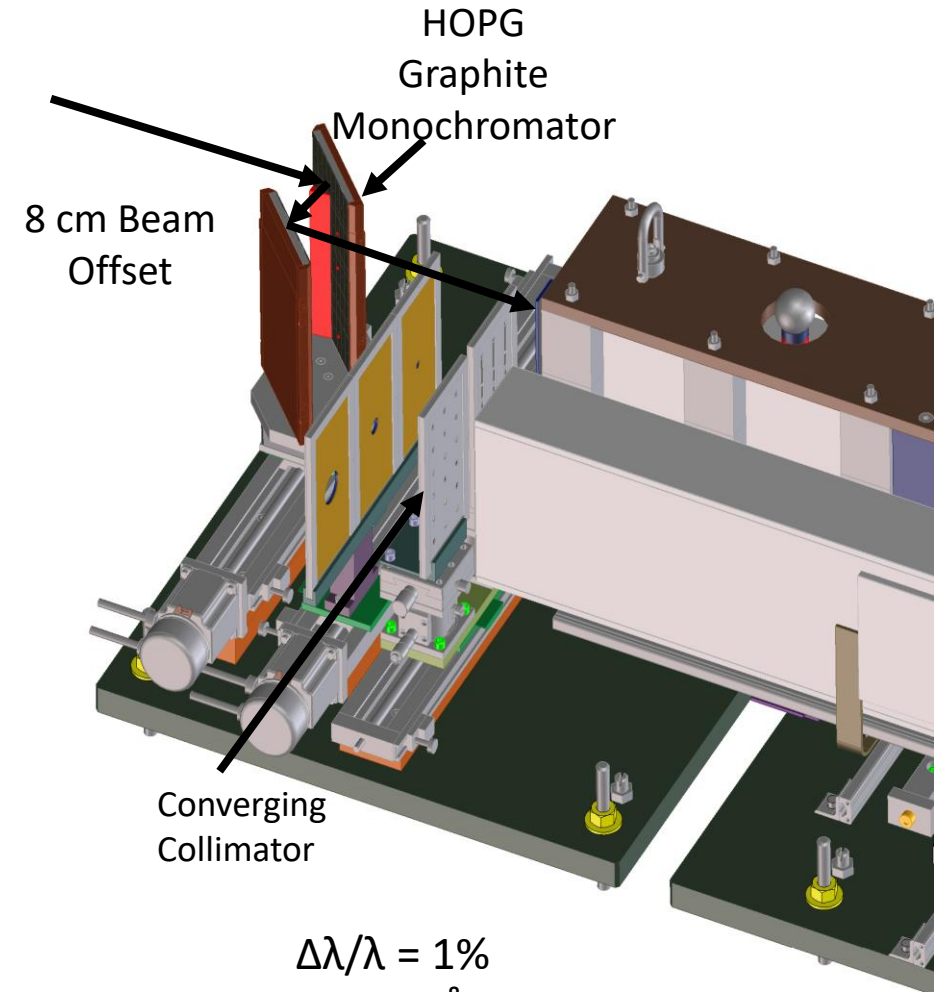


$$\langle \lambda \rangle = 5.3 \text{ \AA}, \frac{\Delta \lambda}{\lambda} = 40\%$$

Gain = 4



$$\frac{\Delta \lambda}{\lambda} = 12\% \text{ (4.5 to 12 \AA)}$$



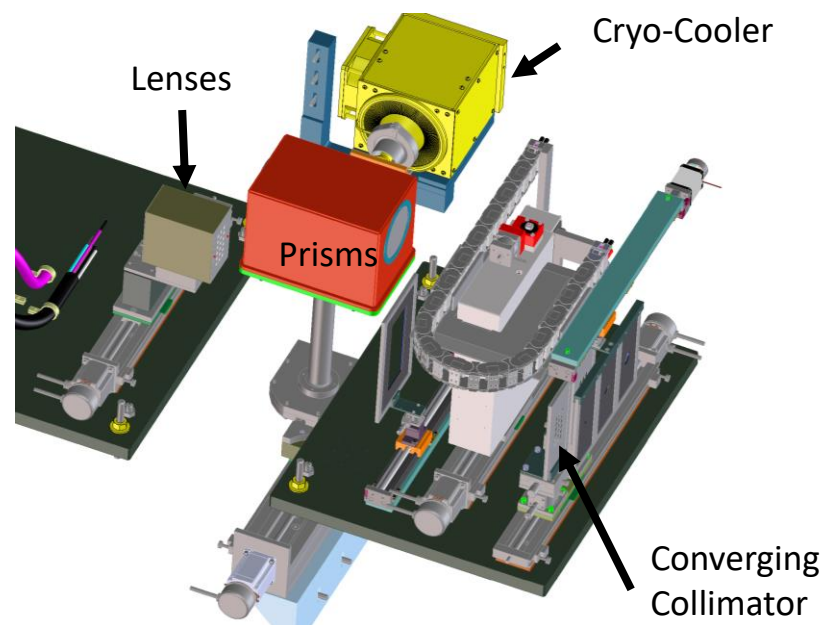
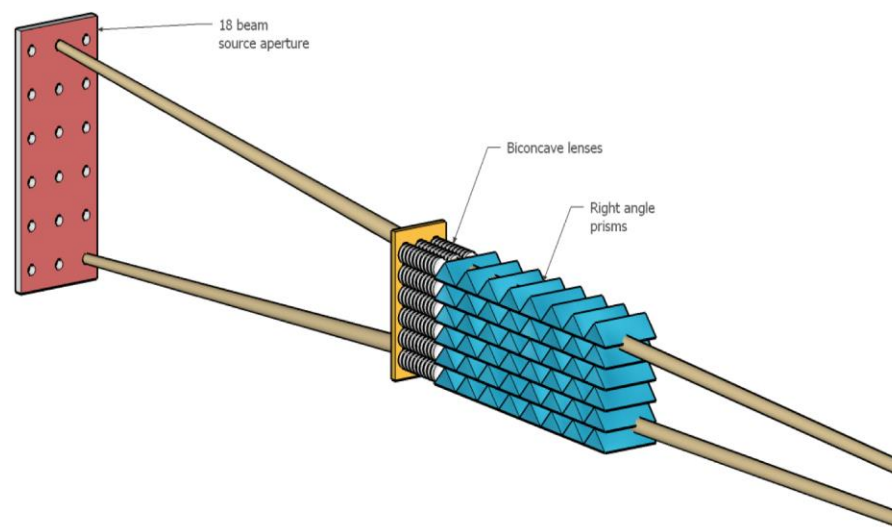
$$\frac{\Delta \lambda}{\lambda} = 1\% \text{ (4 to 6 \AA)}$$

Collimation: circular pinhole, slits, or converging beams (shown here for use with High-Resolution CCD Camera):

$$Q_{\min} = 2e-4 \text{ \AA}^{-1}, \lambda = 6.7 \text{ \AA}$$

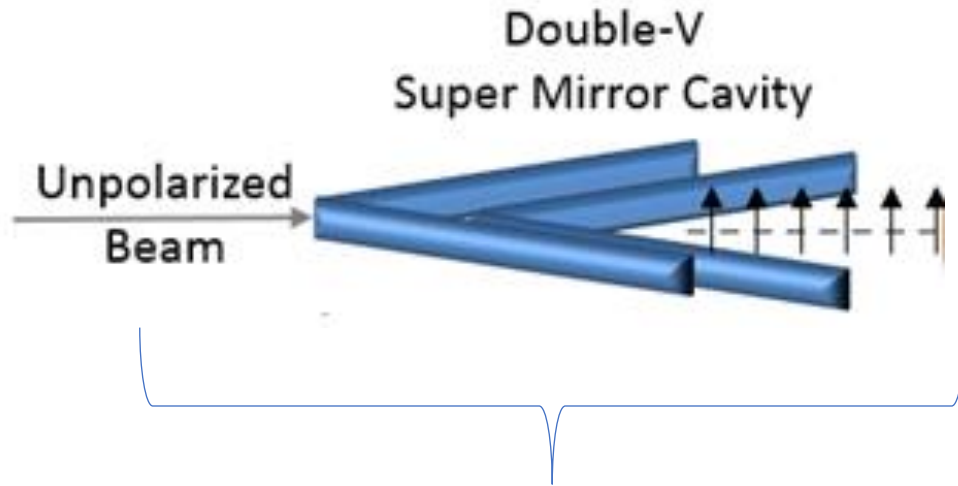
( $Q_{\min} 3e-4 \text{ \AA}^{-1}$  for polarized)

- 18 converging beams
- 13 apertures (cross-talk)
- 14 Lenses / beam
- 9 Prisms / beam (gravity)

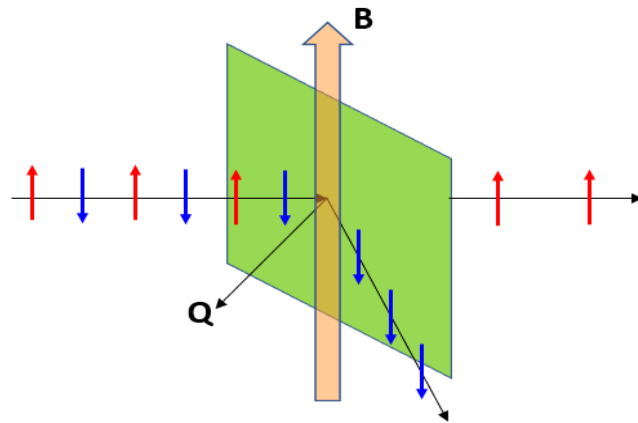




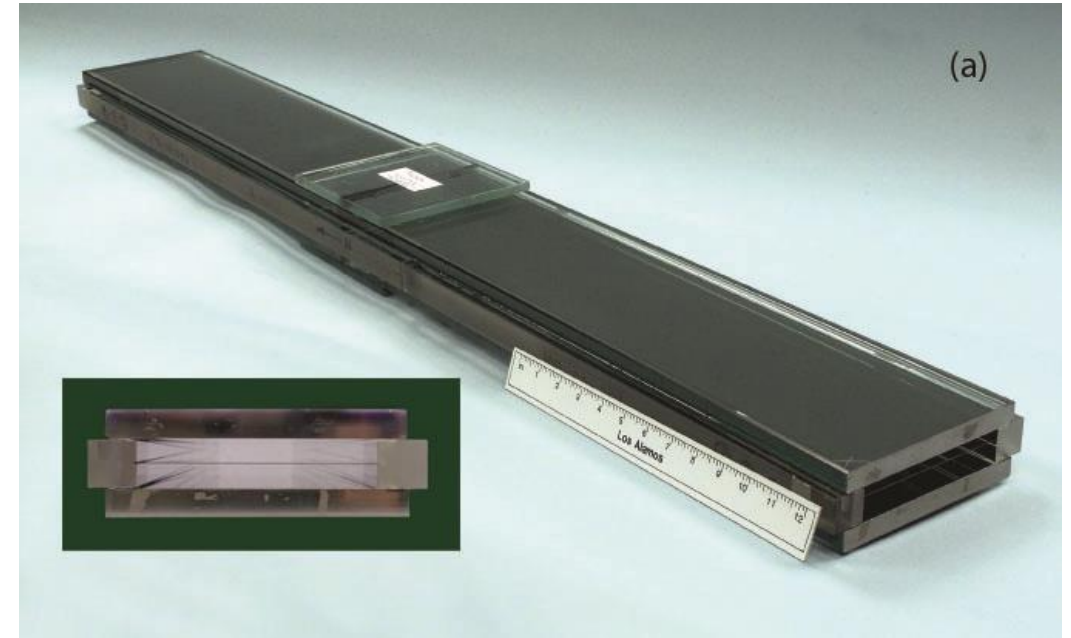
# Neutron Spin Polarizer (neutron spin precess about +/- neutron polarization axis)



$$\text{SLD for } n^\uparrow, n^\downarrow = b_{\text{nuclear}} \mp b_{\text{magnetic}}$$



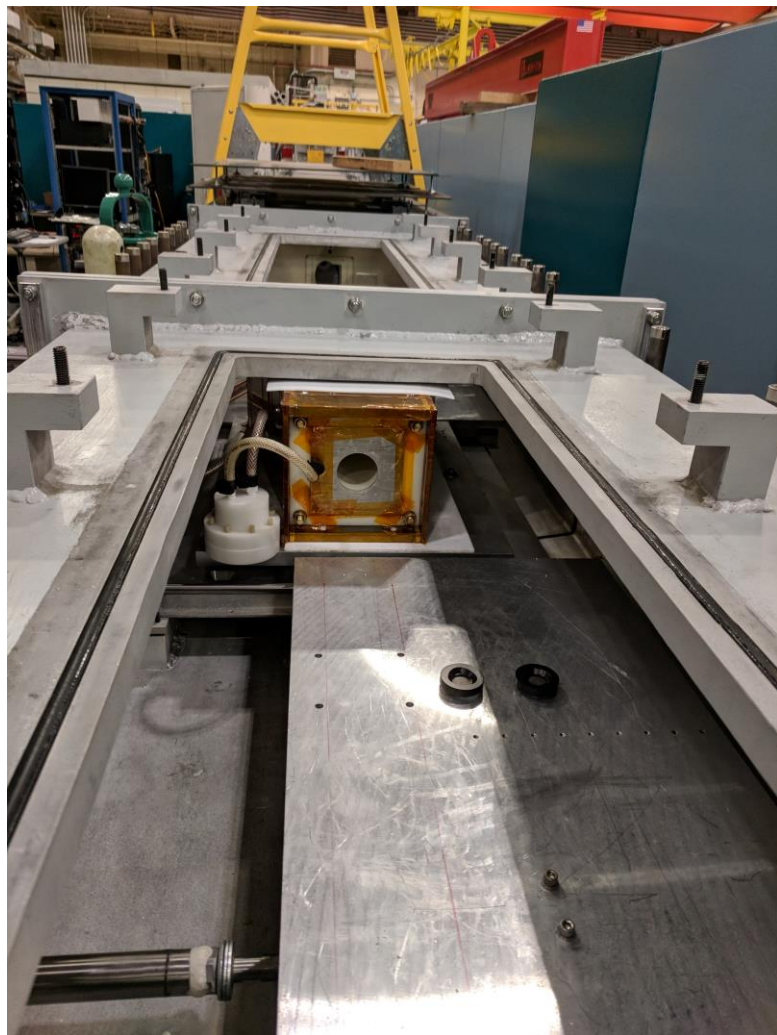
FeSi super mirror



$$P \equiv (n^\uparrow - n^\downarrow) / (n^\uparrow + n^\downarrow) \geq 99.85 \%$$



## Multiple guide boxes (with magnetic guide field)



- Multiple guide boxes contain neutron guides and focusing optics
- At VSANS and NG7 SANS, these guides are fit with magnets and steel plates which create a uniform, vertical magnetic field from the neutron spin polarizing supermirror to the RF spin flipper. The vertical field extends beyond the last guide, into the sample area.
- Here a section of guide is shown with the top removed. The exiting edge of the RF flipper (NG7 SANS) is shown.
- The whole series of guide boxes are evacuated for experiments in order to reduce air scattering.

# RF Flipper for Polarized Beam (translates with beam offset)

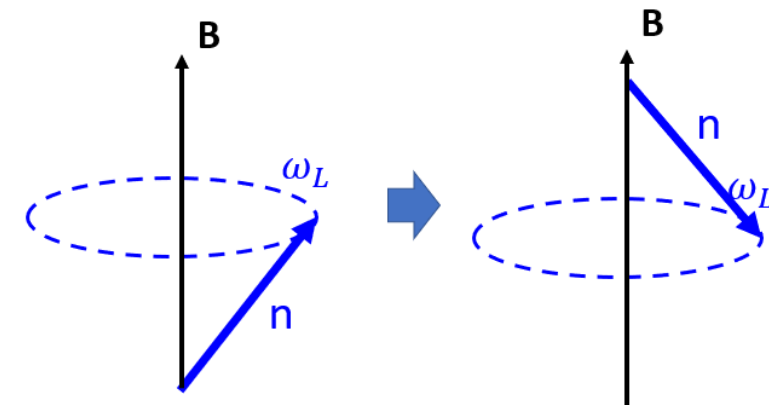
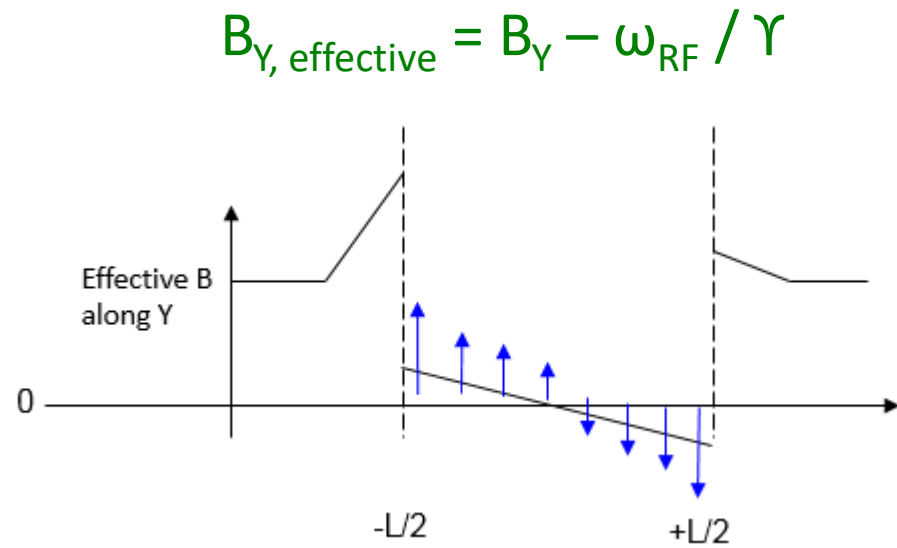
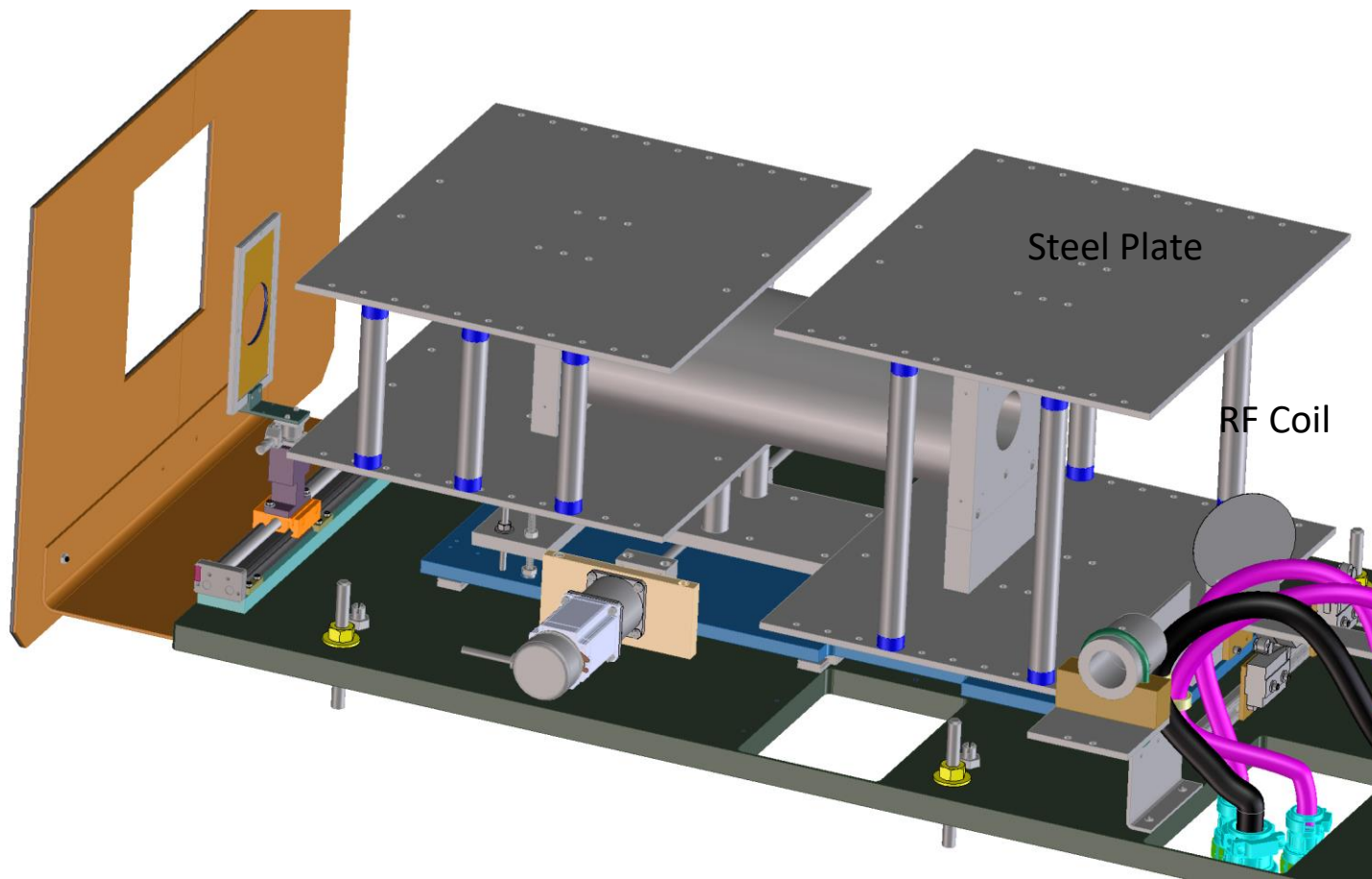


Image courtesy of John Barker

C.P. Slichter, Principles of Magnetic Resonance, (Springer Verlag, Berlin 1980).



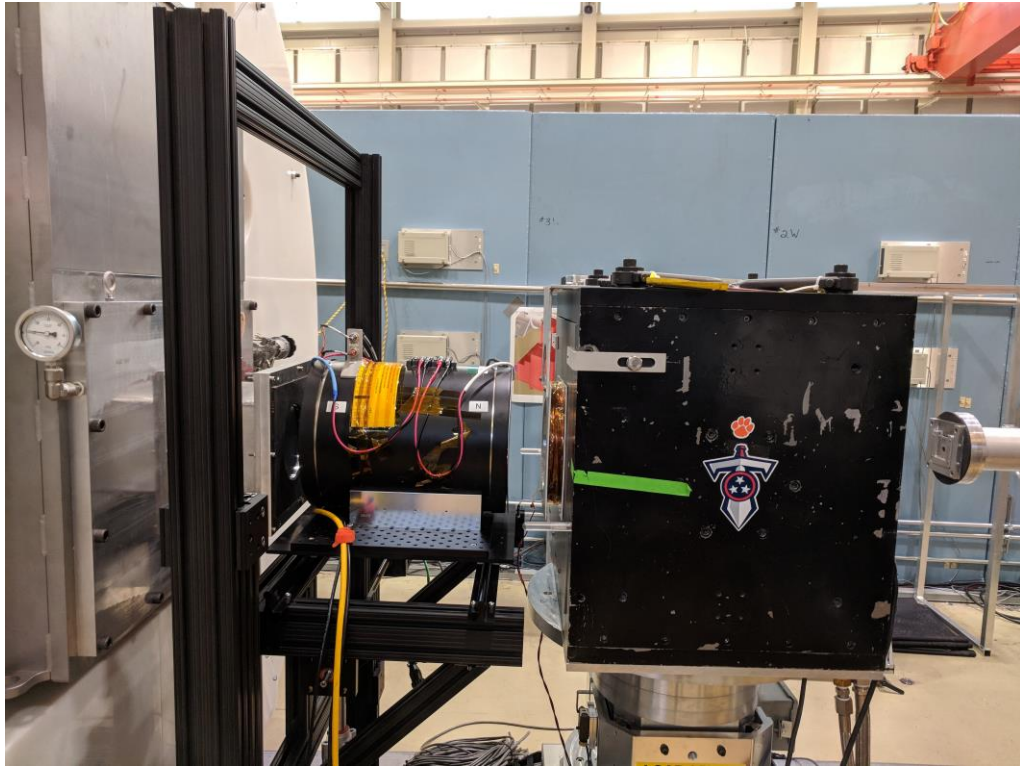


## Large (2m) Sample Area





Sample area with Titan Magnet (0 to 1.6 Tesla) and  $^3\text{He}$  Solenoid Analyzer Installed



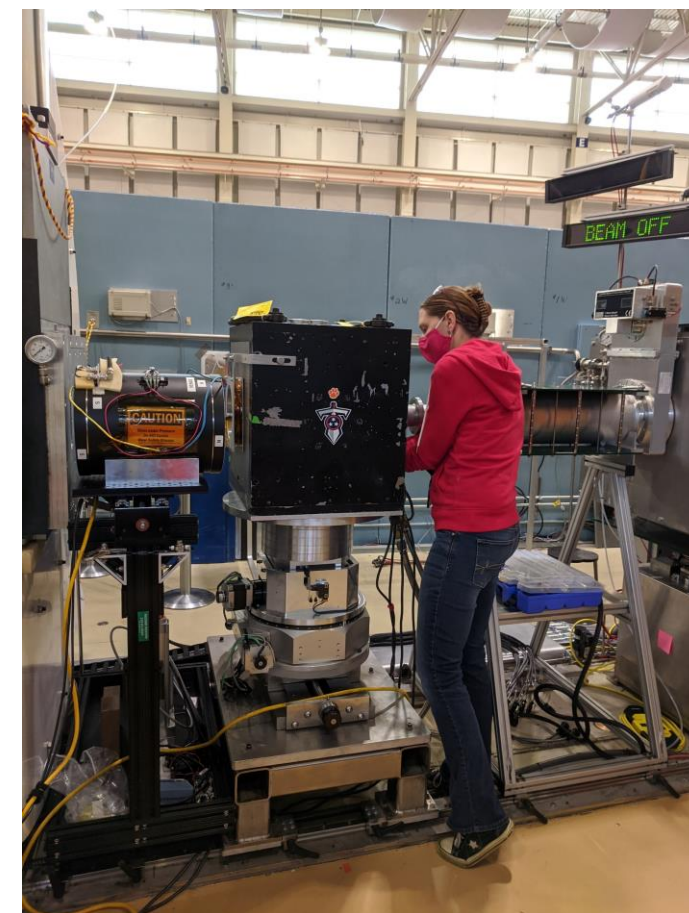
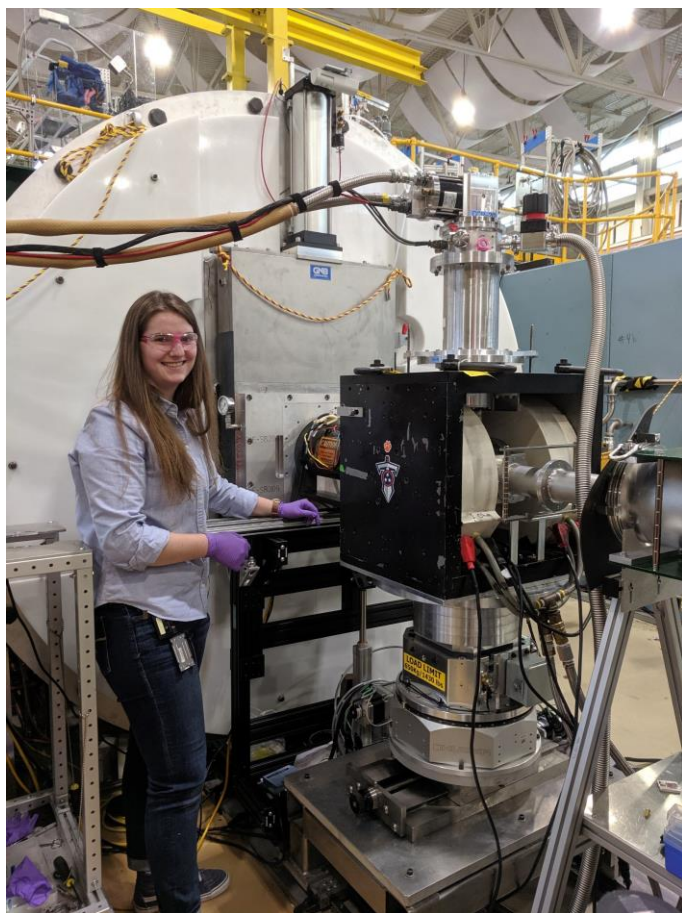
Side view of magnet



Top view into magnet

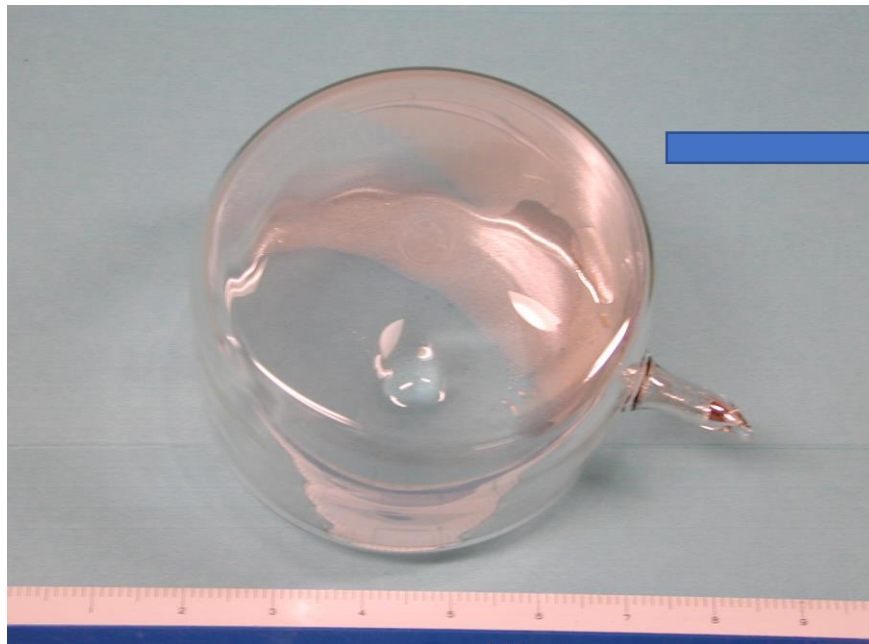
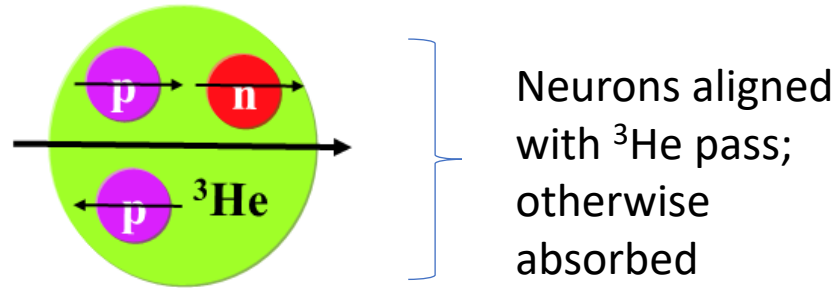


Sample area set-up for a polarized beam experiment, including Titan magnet, CCR, and  $^3\text{He}$  spin filter.

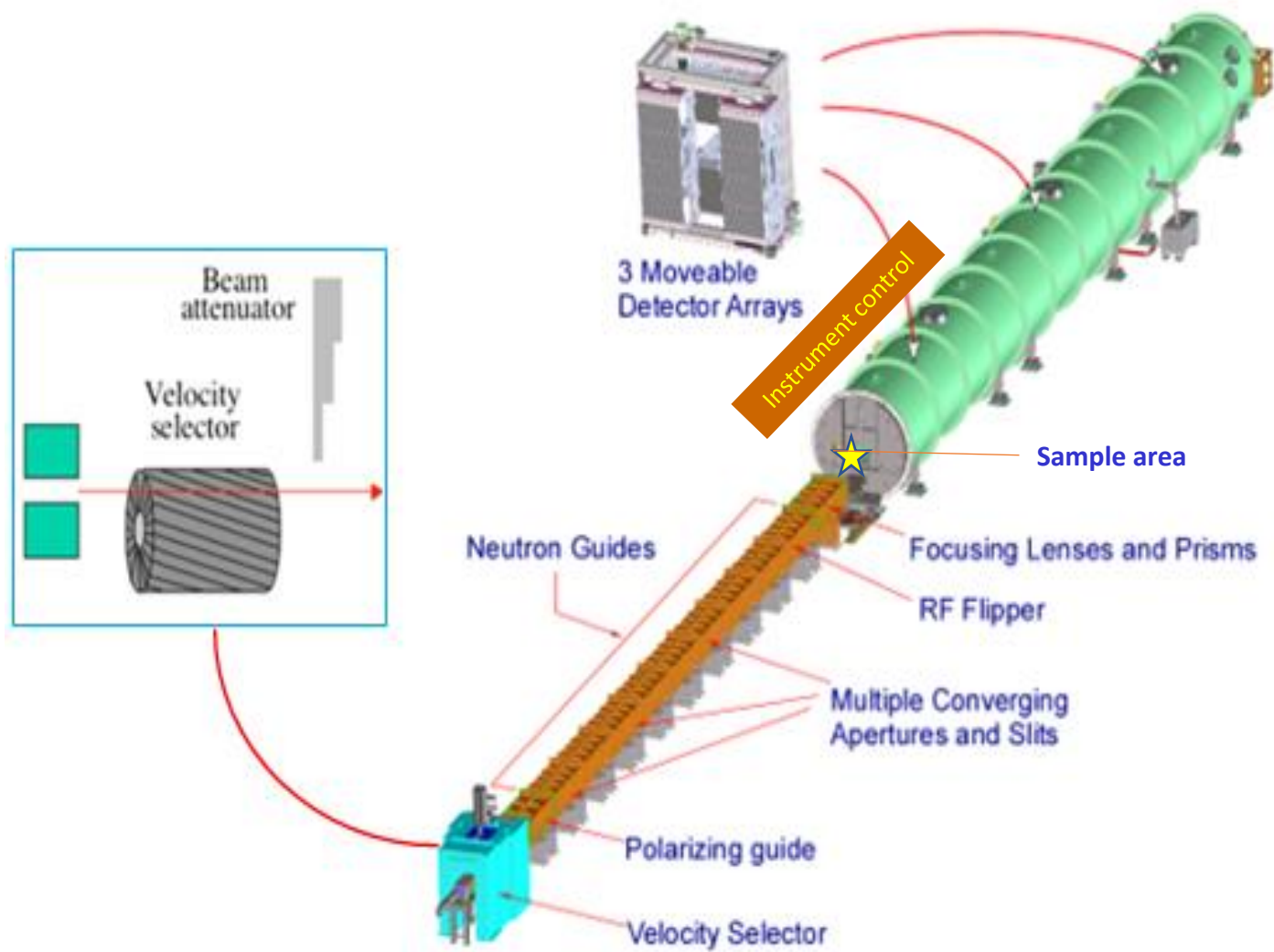


Courtesy of Julie Borchers

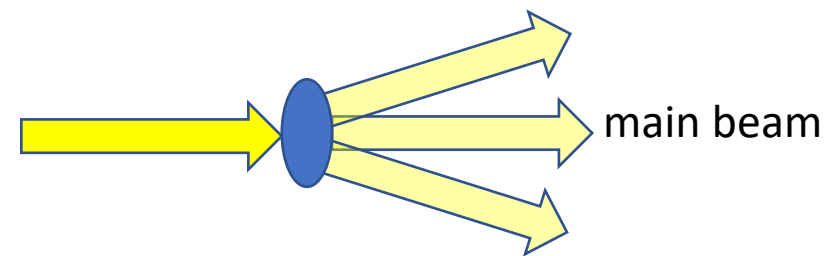
$^3\text{He}$  filled spin filters as SANS/VSANS sit just beyond the sample. The current SANS cells are named from a list of wines and top gun characters.





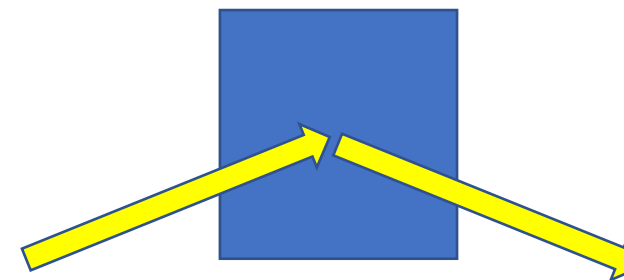


SANS transmission geometry:  
Variation transverse to beam

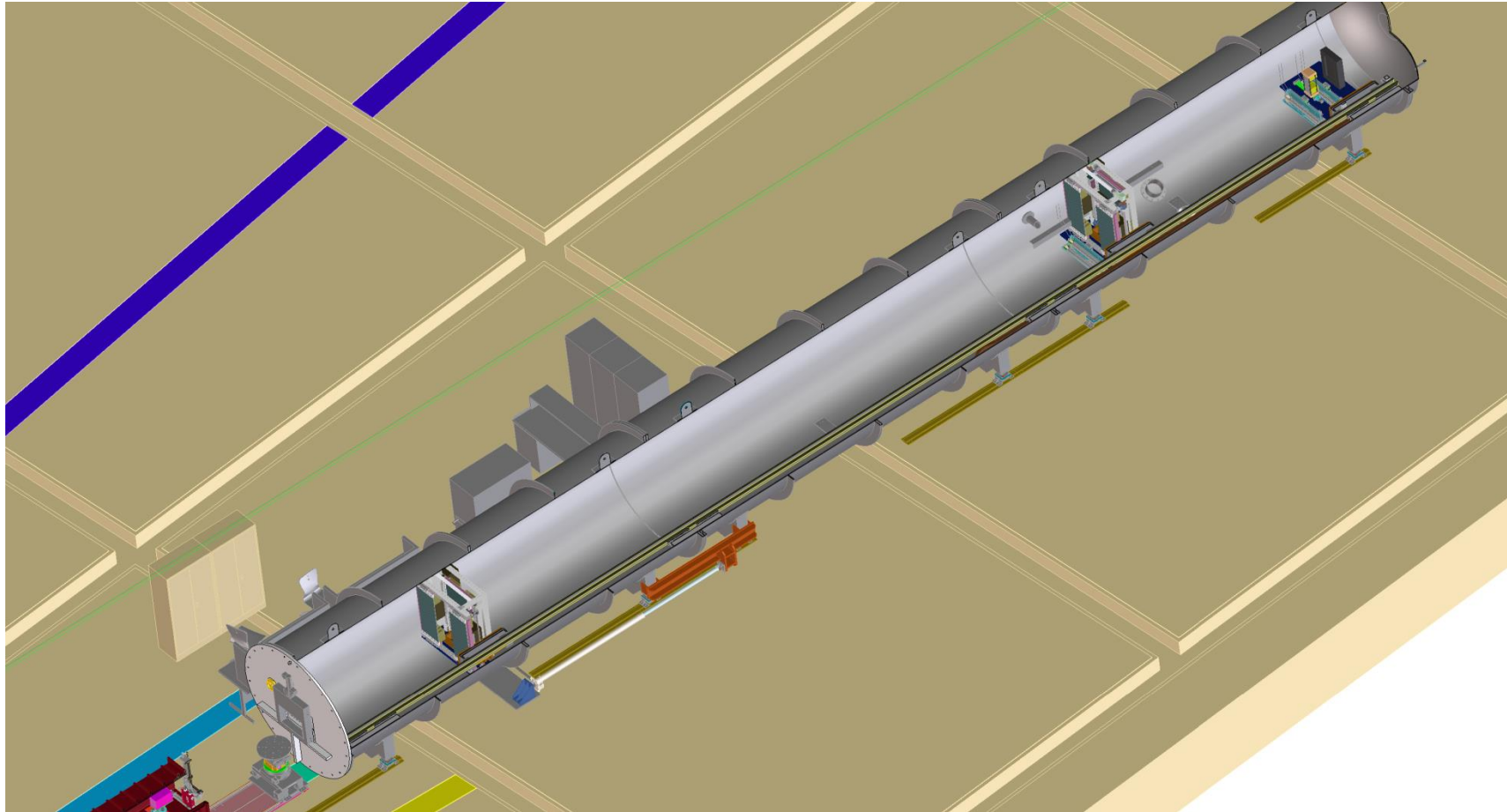


VS.

Reflection geometry:  
depth dependence



Cutaway view of detector vessel showing **three** movable detector carriages





Inside the detector tank



Courtesy of Julie Borchers

### **Movable 2D Detector Panels to form a Picture Frame:**

- 4 Side Panels 384 mm x 1000 mm
- 4 Top/bottom 500 mm x 384 mm
- 8 mm dia. He(3) Tubes, one layer

**Extends Q-range by factor of 30x**

### **Rear CCD**

- 1 of 220 mm x 500 mm tall  
(0.2 mm resolution)

### **Other Multiple Carriage**

#### **Instruments:**

- D33, ILL Grenoble France
- BILBY, ANSTO, Australia



Panel distances:

Front 0.6 m to 10 m

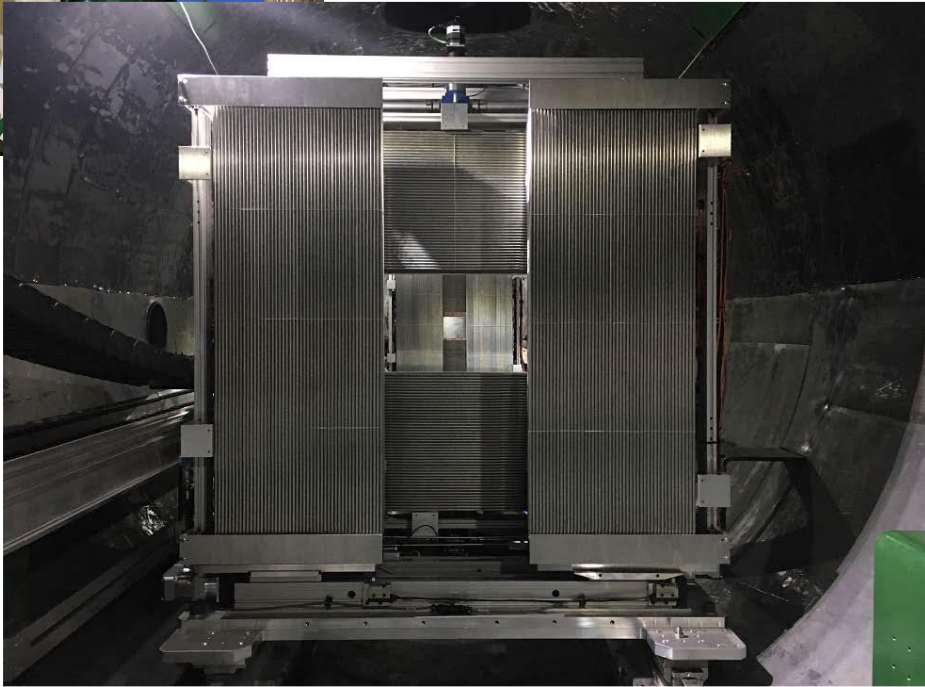
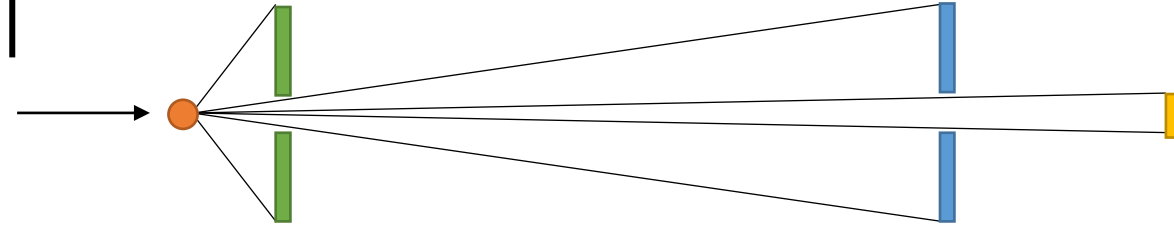
Middle 2.5 m to 18 m

Rear 10 m to 22 m

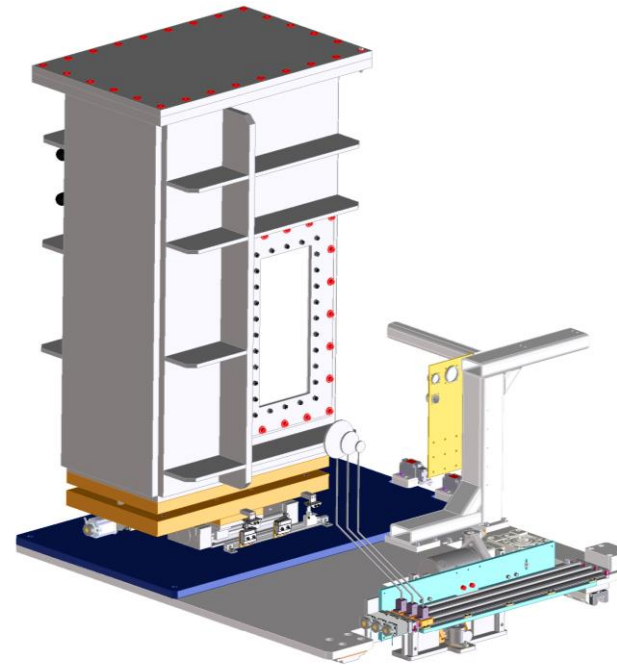




## Detectors

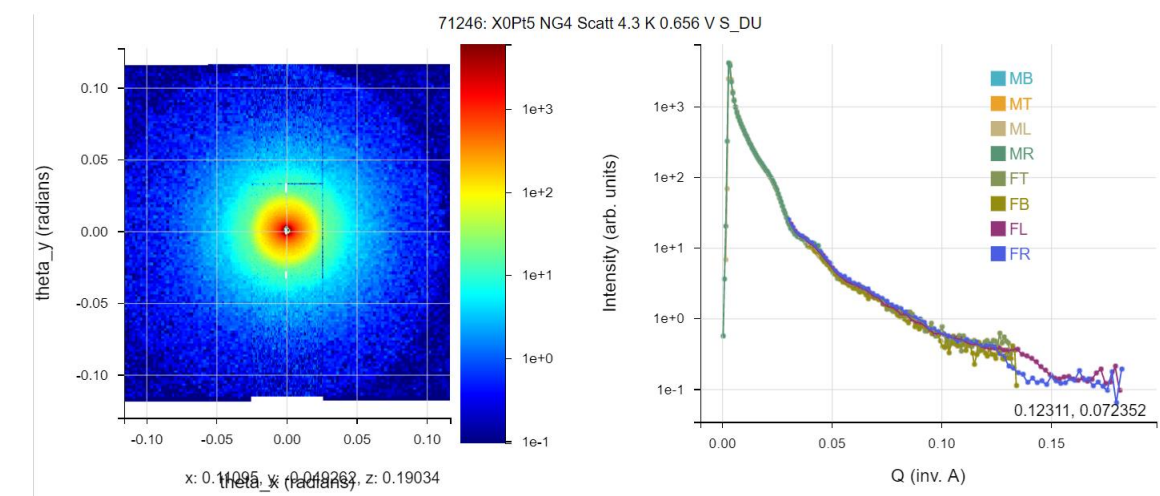
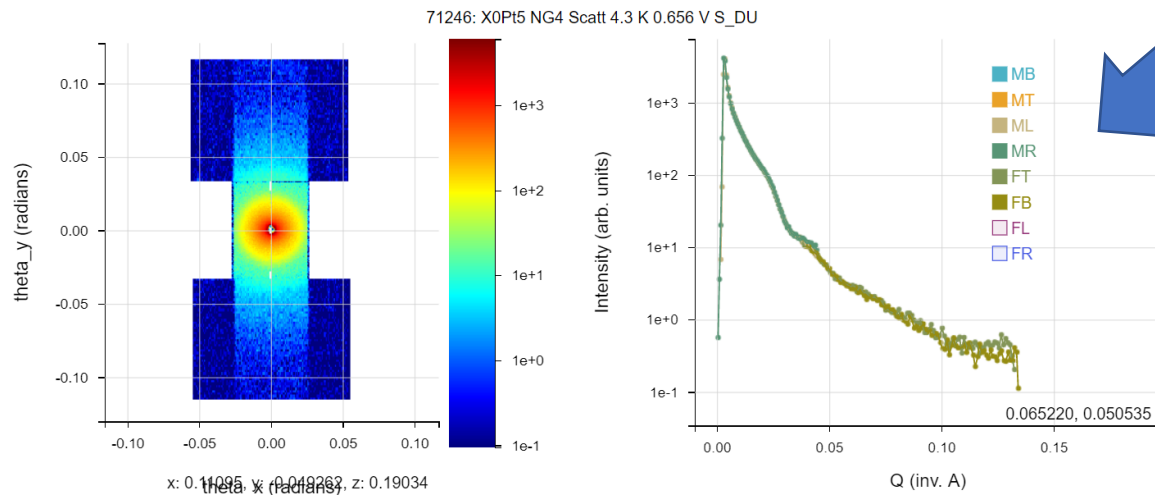
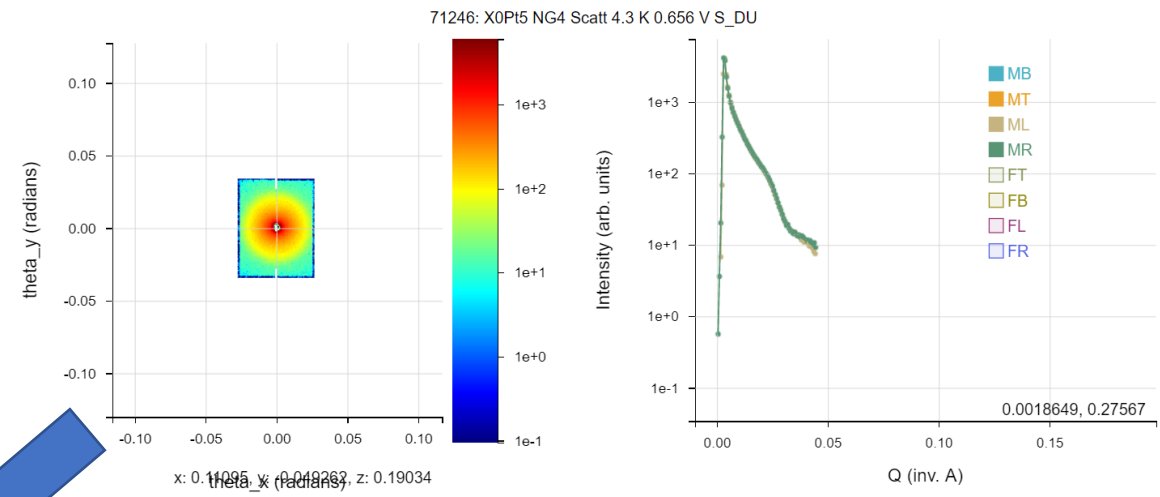
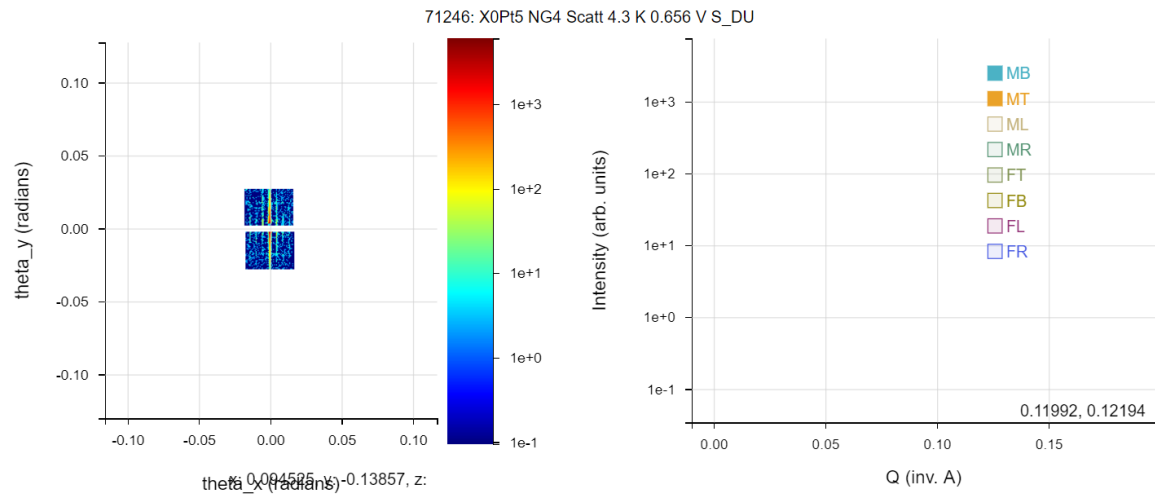


Two carriages with  $^3\text{He}$  tube panels,  
8 mm fwhm  $\rightarrow$  "Picture Frames"



High resolution detector,  
scintillator + CCDs

# A view of how the detectors overlap



Courtesy of Brian Maranville

To view any data: <https://ncnr.nist.gov/ncnrdata/view/vsansbrowser.html>



# Controlling the Instrument



# SASCALC (from IGOR, SANS Reduction) – starting screen



File Edit View Data Analysis Statistics Macros Windows Graph Misc **SANS** Help

- Initialize
- SANS Help
- Main Control Panel
- SASCALC**
- Data Display
- Input Panels
- 1-D Processing
- 2-D Processing
- Event Processing
- NCNR Preferences
- Feedback or Bug Report
- Open Help Movie Page
- Check for Updates

**Trial\_Configuration**

```
0 Source Aperture Diameter = 3.81 cm
1 Source to Sample = 1627 cm
2 Sample Aperture to Detector = 1005 cm
3 Beam diameter = 4.63 cm
4 Beamstop diameter = 2.00 cm
5 Minimum Q-value = 0.0033 1/Å (sigQ/Q = 26.6 %)
6 Maximum Horizontal Q-value = 0.0335 1/Å
7 Maximum Vertical Q-value = 0.0335 1/Å
8 Maximum Q-value = 0.0474 1/Å (sigQ/Q = 5.4 %)
9 Beam Intensity = 368428 counts/s
10 Figure of Merit = 1.33e+07 Å^2/s
11 Attenuator transmission = 0.00666 = Atten # 6
12 ***** CGB *** CGB *****
13 Sample Aperture Diameter = 1.27 cm
14 Number of Guides = 0
15 Sample Chamber to Detector = 1000.0 cm
16 Sample Position is Chamber
17 Detector Offset = 0.0 cm
18 Neutron Wavelength = 6.00 Å
19 Wavelength Spread, FWHM = 0.125
20 Sample Aperture to Sample Position = 5.00 cm
21 Lenses are OUT
22
```

**SASCALC**

Instrument

NGB30  NG7  NGB

Huber  Chamber

0 1 2 3 4 5 6 7 8

133 400 700 1000 1317

3.81 cm

Det Dist (cm) 1000

Lambda 6 0.125

Offset (cm) 0

Lenses?  Offset Traces?

Simulation?

Freeze Clear ? Done

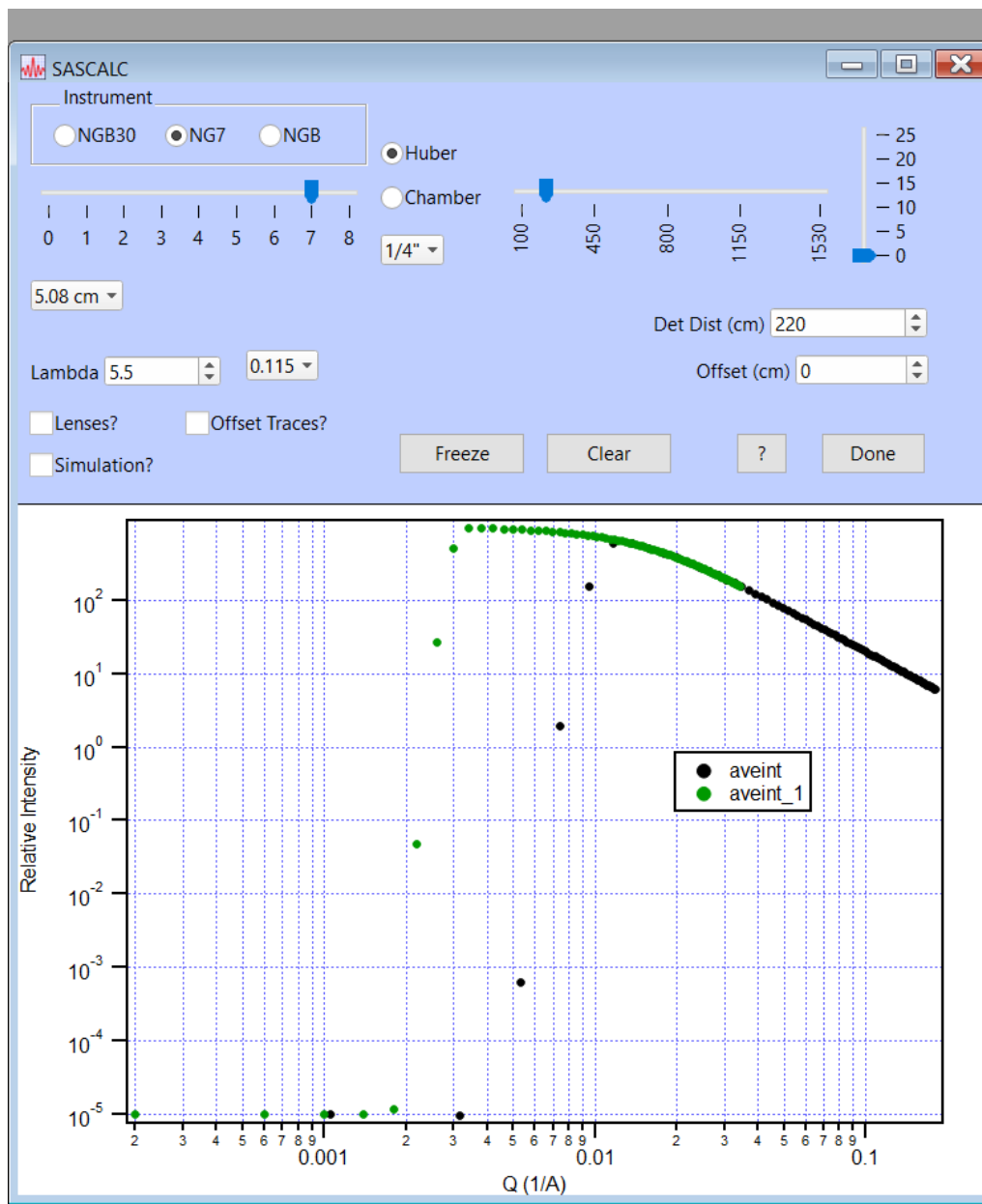
Relative Intensity

Q (1/Å)

● aveint

```
SANSReductionLoader(StrVarOrDefault("root:Packages:NCNRItemStr2
alize()
rMenu "Control" "Retrieve All Windows"
LC())
```

# SASCALC (from IGOR, SANS Reduction) – a configuration set



**Saved Configurations**

**Configuration #1**

Source Aperture Diameter = 5.08 cm  
 Source to Sample = 1262 cm  
 Sample Aperture to Detector = 1460 cm  
 Beam diameter = 7.61 cm  
 Beamstop diameter = 3.00 inches  
 Minimum Q-value = 0.0035 1/Å (sigQ/Q = 34.9 %)  
 Maximum Horizontal Q-value = 0.0251 1/Å  
 Maximum Vertical Q-value = 0.0251 1/Å  
 Maximum Q-value = 0.0355 1/Å (sigQ/Q = 5.8 %)  
 Beam Intensity = 154463 counts/s  
 Figure of Merit = 4.67e+06 Å<sup>2</sup>/s  
 Attenuator transmission = 0.0306 = Atten # 4  
 \*\*\*\*\* NG7 \*\*\* NG7 \*\*\*\*\*  
 Sample Aperture Diameter = 0.64 cm  
 Number of Guides = 2  
 Sample Chamber to Detector = 1400.0 cm

**Trial Configuration**

0 Source Aperture Diameter = 5.08 cm  
 1 Source to Sample = 487 cm  
 2 Sample Aperture to Detector = 280 cm  
 3 Beam diameter = 4.11 cm  
 4 Beamstop diameter = 2.00 inches  
 5 Minimum Q-value = 0.0140 1/Å (sigQ/Q = 24.2 %)  
 6 Maximum Horizontal Q-value = 0.1324 1/Å  
 7 Maximum Vertical Q-value = 0.1324 1/Å  
 8 Maximum Q-value = 0.1863 1/Å (sigQ/Q = 5.0 %)  
 9 Beam Intensity = 768469 counts/s  
 10 Figure of Merit = 2.32e+07 Å<sup>2</sup>/s  
 11 Attenuator transmission = 0.00205 = Atten # 8  
 12 \*\*\*\*\* NG7 \*\*\* NG7 \*\*\*\*\*  
 13 Sample Aperture Diameter = 0.64 cm  
 14 Number of Guides = 7  
 15 Sample Chamber to Detector = 220.0 cm  
 16 Sample Position is Huber  
 17 Detector Offset = 0.0 cm  
 18 Neutron Wavelength = 5.50 Å  
 19 Wavelength Spread, FWHM = 0.115  
 20 Sample Aperture to Sample Position = 5.00 cm  
 21 Lenses are OUT  
 22

Windows Latin 1



Online V CALC (for VSANS): <http://nicedata.ncnr.nist.gov/niceweb/nicejs/V CALC/>

### Beam

$\lambda$  (Å) 5.5  $\Delta\lambda/\lambda$  0.12 Frontend Trans. = 1.0 Flux  $\Phi$  = 1.575e+11 Beam Current (1/s) = 2.884e+5  $I_0$  (1/s/cm<sup>2</sup>) = 9.106e+5

### Collimation

Num. guides 4 Source aperture (mm) 60.0 Source distance (cm) = 1582 T\_filter = 0.5245418835981687 T\_guide = 0.8852928099999999  
 Ext. Sample aperture (mm) 6.35 Sample ap. to GV (cm) 75 Sample to GV (cm) 75  
 $L_1$  (cm) = 1507  $A_1A_2/L_1$  = 0.000003913

### Middle Carriage

SDD input (cm) 1450 SDD (cm) = 1525  $L_2$  (cm) = 1525 Beam drop (cm) = 0.4384 Beamstop Required (inch) = 2.976 Beamstop (inch) 3  
 $2\theta_{min}$  (rad) = 0.002498  $Q_{min}$  (1/Å) = 0.002854  $(\Delta Q/Q_{min})_x$  = 0.4147  $(\Delta Q/Q_{min})_y$  = 0.4149  $Q_{max}$  (1/Å) = 0.05000  $(\Delta Q/Q_{max})_x$  = 0.05434  $(\Delta Q/Q_{max})_y$  = 0.05434  
 Ref Beam Ctr<sub>x</sub> (cm) 0 Ref Beam Ctr<sub>y</sub> (cm) 0 From file

Left Panel Lateral Offset (cm) -1.5  $Q_{right}$  (1/Å) = -0.001854  $Q_{left}$  (1/Å) = -0.03142

Right Panel Lateral Offset (cm) 0.5  $Q_{left}$  (1/Å) = 0.0009102  $Q_{right}$  (1/Å) = 0.03048  $Q_{bottom}$  (1/Å) = -0.03901  $Q_{top}$  (1/Å) = 0.03840

### Front Carriage

$Q_{min}$  (1/Å) = 0.03048  $(\Delta Q/Q_{min})_x$  = 0.06235  $(\Delta Q/Q_{min})_y$  = 0.06236  $Q_{max}$  (1/Å) = 0.1881  $(\Delta Q/Q_{max})_x$  = 0.04939  $(\Delta Q/Q_{max})_y$  = 0.04939

SDD input (cm) 370 SDD (cm) = 445 Ref Beam Ctr<sub>x</sub> (cm) 0 Ref Beam Ctr<sub>y</sub> (cm) 0 From file

Left Panel Lateral Offset (cm) -11.5176  $Q_{right}$  (1/Å) = -0.03142  $Q_{left}$  (1/Å) = -0.1321 Match to left edge of ML

Right Panel Lateral Offset (cm) 11.2799  $Q_{left}$  (1/Å) = 0.03048  $Q_{right}$  (1/Å) = 0.1312 Match to right edge of MR

Top Panel Vertical Offset (cm) 15.8467  $Q_{bottom}$  (1/Å) = 0.03840  $Q_{top}$  (1/Å) = 0.1306 Match to top edge of MR

Bottom Panel Vertical Offset (cm) -15.2487  $Q_{top}$  (1/Å) = -0.03901  $Q_{bottom}$  (1/Å) = -0.1312 Match to bottom edge of MR

# NICE Aligning the Instrument

Measurement Setup (Alt-T)

File View Experiment Window Help

VSANS (Experiment - Instrument Testing): 24845

Name	$\Delta\lambda/\lambda$	$\lambda$ (Å)	Att	Guide	Src Ap.
NG9 Trans 9A	0.12	9.0	0	9	60.0

These panels will be used to run configurations

run -group 1 -user VSN -prefix MAY19

Alignment & Configuration Sample Times Polarized Beam

guide11 guideProcessor:  
Received control exceptions from descendent node(s):  
sampleApertureTransMap.key:

**Config**

Config Name: NG9 Trans 9A

$\lambda$  (Å): 9.00000  $\Delta\lambda/\lambda$ : 0.12

Guide: 9 Attenuator: 0

**Sample Positions**

Sample Aperture to Gate Valve (cm): 21.0000

Sample to Gate Valve (cm): 11.2000

**Detector Positions**

Distance (cm)	Offset (cm)				
	Left	Right	Top	Bottom	
Carriage 1:	100.000	-13.0000	13.0000	17.4000	-17.2000
Carriage 2:	500.000	-17.0000	16.0000	2.00000	-2.00000
Carriage 3:	2340.00	0.00000			

**Beam Stops**

Carriage 2		Carriage 3	
BS:	0	BS:	0
BS-X (cm):	-2.00000	BS-X (cm):	-0.0500000
BS-Y (cm):	2.40000	BS-Y (cm):	1.30000

**Aperture Definitions**

Source Aperture

Aperture: 60.0

Slit Definition

	W (cm)	H (cm)
Slit 01	0.00000	0.00000
Slit 11	0.00000	0.00000

Internal Sample Aperture

Aperture: OUT

External Sample Aperture

Shape: CIRCLE

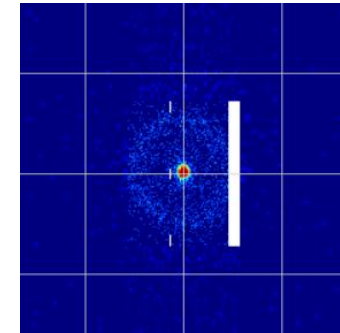
Width (cm): 0.00000

Height (cm): 0.00000

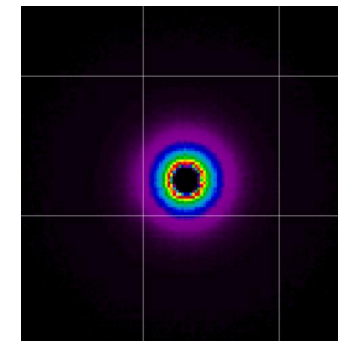
$\emptyset$  (cm): 12.7000

**Beam Centers**

	X (cm)	Y (cm)
Carriage 1 Reference	-1.90000	-0.800000
Carriage 2 Reference	0.200000	-0.900000
Carriage 3	0.00000	0.00000

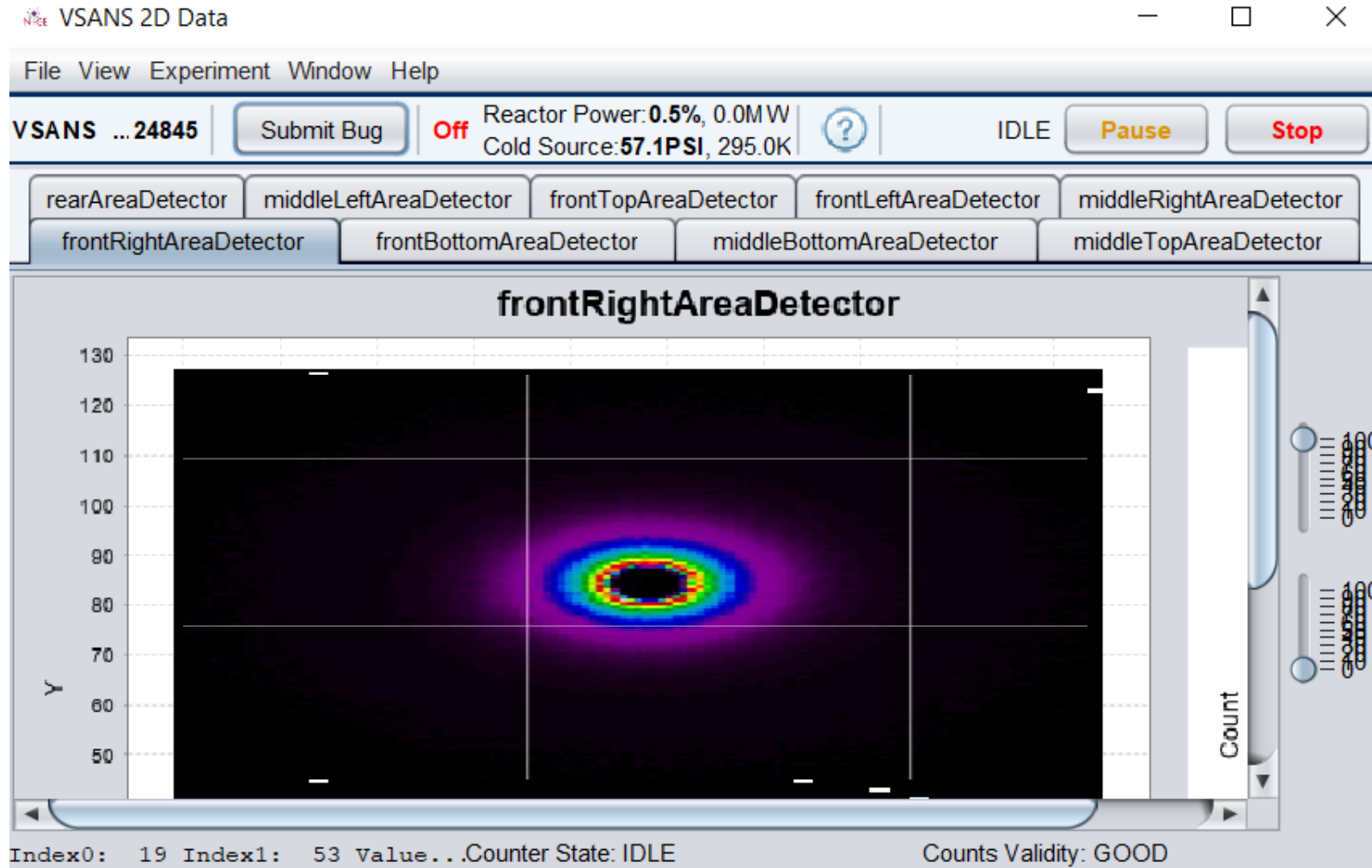


Transmissions are used to set beam center (the middle right detector panel is translates to left to place beam away from edges for measurement)



Scattering files to align beam stop

## NICE 2D Data Viewer



Hold the 'H' key and drag over the display for the histogram window.

Hold the 'C' key and click/drag the display for the beam center window. Beam centers (in centimeters) for front and middle detectors can only be calculated by dragging on the respective left and right detector displays. The rear detector has its beam centers calculated in pixels.

This does **NOT** work in logarithmic mode.



# NICE Running Configurations (collecting data)



NICE Client Measurement Setup (Alt-T)

File View Experiment Window Help

VSANS (Experiment - Instrument Testing): 24845 Submit Bug Off Reactor Power: 0.5%, 0.0MW Cold Source: 57.1PSI, 295.0K IDLE Pause Stop

Queue Old Queue

Done move "huberTranslation.softPosition" "-200"  
Done move "huberTranslation.softPosition" "-450"  
Done move "siMirror.siMirror" "IN"  
Done move "chamberTranslation.softPosition" "-22"  
Done move "chamberTranslation.softPosition" "-22"  
Done move "chamberTranslation.softPosition" "-19"  
Done setRawPosition "chamberTranslation" 0.0  
Done move "slotIndex.mode" "CHAMBER"  
Done move "slotIndex.mode" "HUBER"  
Done move "slotIndexToHuberTranslation.map" "{}" "slotIndexToHuber"  
Done move "slotIndex.description" "Titan"  
Done move "slotIndexToHuberTranslation.map" "{}" "slotIndexToHuber"  
Done move "slotIndex.description" "Titan"  
Done move "rfFlipperPowerSupply.outputEnabled" "true"  
Done move "rfFlipperPowerSupply.outputEnabled" "false"  
Done install "adam4021" -s false  
Done move "adam4021.voltage" "7.4"  
Done move "adam4021.voltage" "0"  
Done move "adam4021.voltage" "7.4"  
Done move "adam4021.voltage" "0"  
Done move "adam4021.voltage" "-0.06"  
Done move "guide.guide" "1"

2020-09-03  
2020-09-03

Devices

#	Sample Description	Slot Position	Thickness (cm)	Sample Intent	Group ID
1	Empty <configuration>	2	0.1	Empty...	1
2	Steel <configuration>	3	1.118	Sample	2
3	H2O NSE <configuration>	4	0.1	Sample	3
4	MT CEL NSE <configurati...	5	0.1	Empty...	4

NG9 Trans 9A

time

Drag into queue...

Quick Time Estimate : 0 seconds # Runs 1 Add Row Duplicate Row Delete Row Run

Alignment & Configuration **Sample Times** Polarized Beam

```
2020-09-03T13:05:47 > move "adam4021.voltage" "0" (not typed at console)
2020-09-03T13:05:48 > Now starting command: move "adam4021.voltage" "0"
2020-09-03T13:06:24 > move "adam4021.voltage" "-0.06" (not typed at console)
2020-09-03T13:06:24 > Now starting command: move "adam4021.voltage" "-0.06"
2020-09-03T13:06:42 > SERIOUS: Driver has entered broken state. Hardware port: "/dev/ttyAux2". manufacturer: "Advantech" model: "ADAM-4021".
2020-09-03T13:06:42 > ERROR: adam4021.voltage: Received control exceptions from descendent node(s):
    magnetPowerSupplyCore.multiPowerSupply:
    nice.server.driver.exceptions.old.RecoverableHardwareException:
    nice.server.driver.exceptions.old.RecoverableHardwareException: nice.server.driver.exceptions.old.HardwareComException: Could
    not read enough data from Serial Port "/dev/ttyAux2". This is likely caused by the device being unplugged/turned off/or having
    mismatched communication parameters with NICE.
2020-09-03T13:25:46 > move "guide.guide" "1" (not typed at console)
2020-09-03T13:25:47 > Now starting command: move "guide.guide" "1"
```



# Running Polarized Configurations (more options shown)

Units of cm      Sample, open, empty, blocked beam  
 Thickness      Intent

**Sample Description**  
 CoFe2O4 Nanoparticles <configuration>      1.0      Sample ▼

Pol Type	#UU or U Scatt	#DU or -- Scatt	#DD or D Scatt	#UD or -- Scatt	Group ID	Temp	Adam 4021	Config	3He (sec)	Trans (sec)	Scatt (sec)
SMFrontHe 3Back	1	2	1	2	1	300	7.4	NG4	100	100	3600
HalfPol SMFront	1		1		2	200	7.4	NG4		100	1800
Unpol					3	100	0	NG4		100	900

Number of scattering files to repeat; 1 is assumed for unpolarized.

Select polarization type

Temperature in K

Electro-magnet voltage

Drag and drop (into queue) files to be run. **3He** runs unpolarized transmissions of <sup>3</sup>He OUT, IN beam. **Trans** runs UU, DU, DD, UD, supermirror-only (or D and U or Unpolarized) transmissions. **Scatt** runs the number and type of scattering files listed to the left.





# NIST CENTER FOR NEUTRON RESEARCH

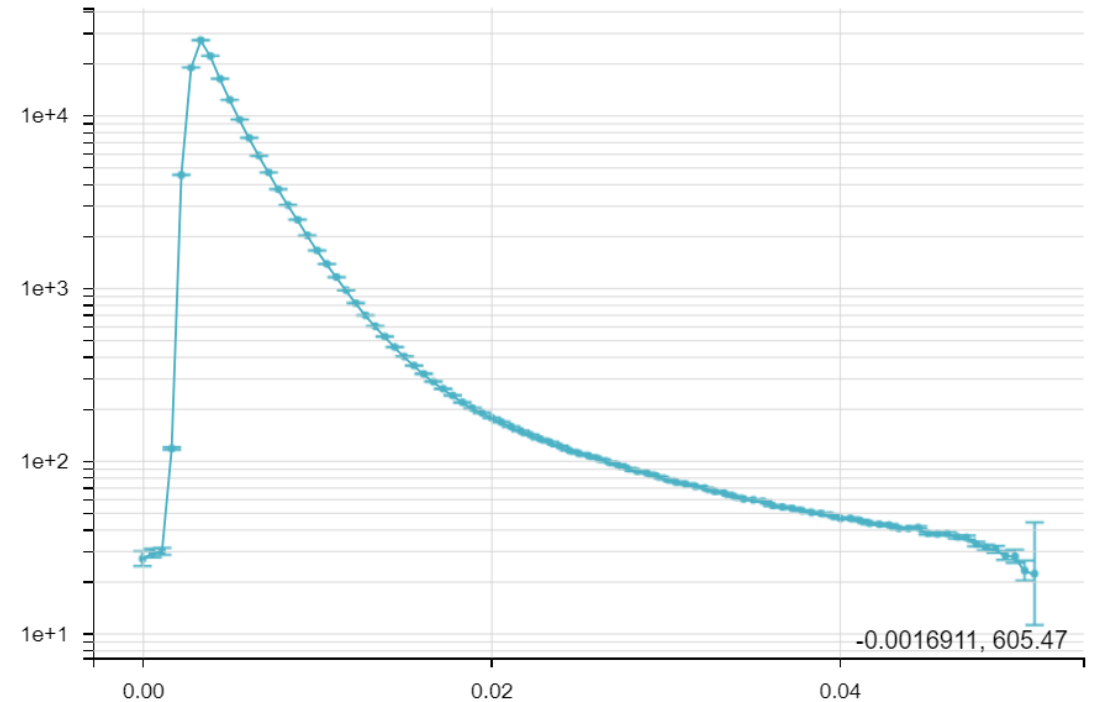
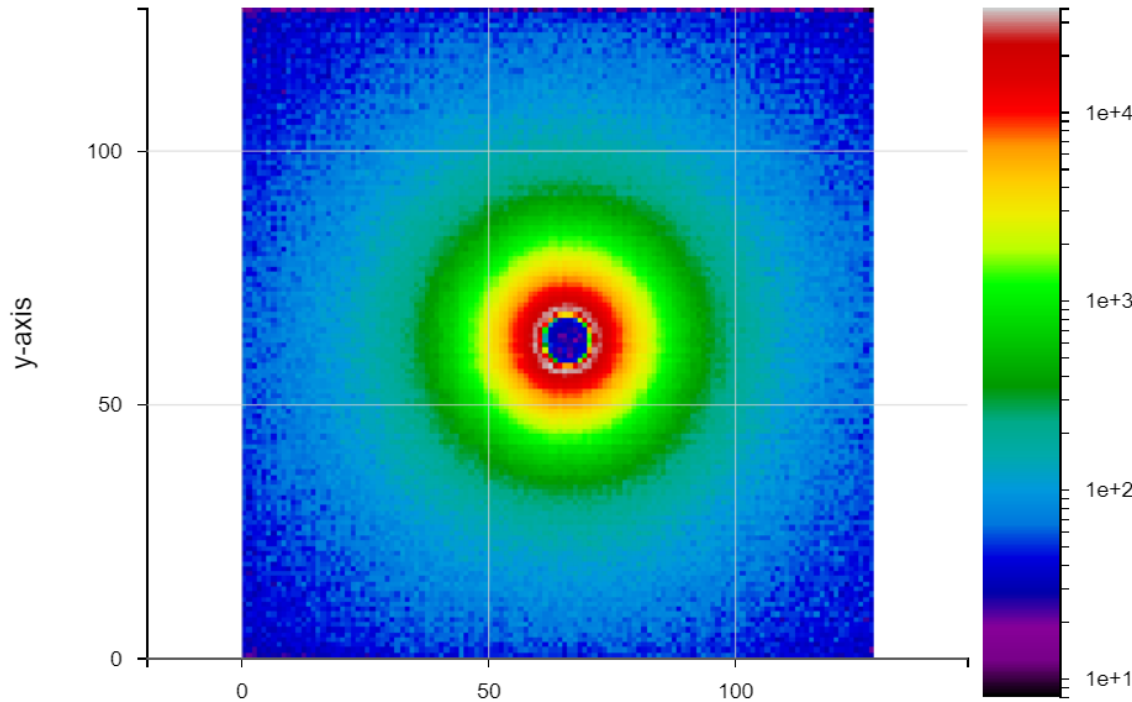
Live neutron instrument data:

Power: 0.0 MW, 0.5 % (2021-02-04 12:44:53)

- grid
- BT1
- BT4
- BT5
- BT7
- BT8
- CANDOR
- DCS
- HFBS
- MACS
- MAGIK
- NGBSANS**
- NGB30SANS
- NG7
- NG7SANS
- NSE
- PBR
- PHADES
- SPINS
- VSANS

## NGBSANS

sans120404: runPoint {"counter.countAgainst"="TIME", "configuration"="5m 12A Scatt", "sample.description"="Nafion Ink TFSI 50D Resonicated 5m 12A Scatt", "sample.thickness"="1.0", "counter.timePreset"="3600.0", "slotIndex"="3.0"} -g 10 -p "DEC20" -u "NGB"



lg scale

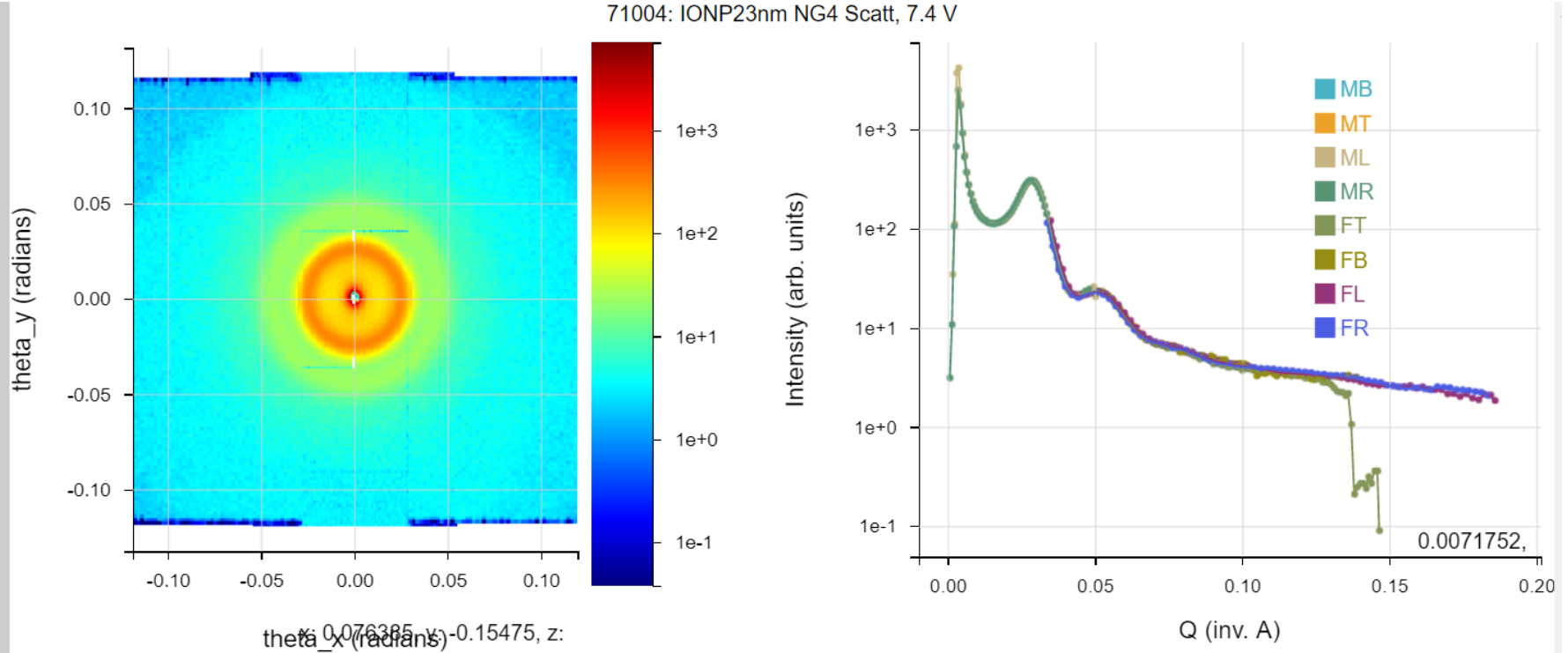
x-axis -26.970. -22.681. NaN

To view any data online: <https://ncnr.nist.gov/ncnrdata/view/vsansbrowser.html>

## VSANS data

[ncnrdata/vsans/202011/28007/data/](#)

filename ▼	last-modified
sans71008.nxs.ngv	2020-12-07 09:33:23
sans71007.nxs.ngv	2020-12-07 08:51:06
sans71006.nxs.ngv	2020-12-07 08:48:22
sans71005.nxs.ngv	2020-12-07 07:57:16
sans71004.nxs.ngv	2020-12-07 07:54:32
sans71003.nxs.ngv	2020-12-07 07:03:26
sans71002.nxs.ngv	2020-12-07 07:00:41
sans71001.nxs.ngv	2020-12-07 06:09:37
sans71000.nxs.ngv	2020-12-07 06:06:52
sans70999.nxs.ngv	2020-12-07 05:15:47
sans70998.nxs.ngv	2020-12-07 05:13:02
sans70997.nxs.ngv	2020-12-07 04:21:58
sans70996.nxs.ngv	2020-12-07 04:19:13
sans70995.nxs.ngv	2020-12-07 03:28:08
sans70994.nxs.ngv	2020-12-07 03:25:23
sans70993.nxs.ngv	2020-12-07 02:34:19
sans70992.nxs.ngv	2020-12-07 02:31:34
sans70991.nxs.ngv	2020-12-07 01:40:29
sans70990.nxs.ngv	2020-12-07 01:37:44
sans70989.nxs.ngv	2020-12-07 00:46:40
sans70988.nxs.ngv	2020-12-07 00:43:56
sans70987.nxs.ngv	2020-12-06 23:52:50
sans70986.nxs.ngv	2020-12-06 23:50:05
sans70985.nxs.ngv	2020-12-06 22:59:00
sans70984.nxs.ngv	2020-12-06 22:56:15
sans70983.nxs.ngv	2020-12-06 22:05:10
sans70982.nxs.ngv	2020-12-06 22:02:25
sans70981.nxs.ngv	2020-12-06 21:11:20
sans70980.nxs.ngv	2020-12-06 21:08:36



logZ  show mask

logX  logy

users: Kathryn Krycka;  
 title: Exchange Constant Variation with Size  
 elapsed: 3000  
 timePreset: 3000

description: IONP23nm NG4 Scatt, 7.4 V  
 local contact: Kathryn Krycka  
 wavelength: 5.50000  
 NeXus viewer: [link](#)

HDF Viewer: <https://ncnr.nist.gov/ncnrdata/view/nexus-hdf-viewer.html?pathlist=ncnrdata+vsans>

NeXus-HDF5 file viewer sans71006.nxs.ngv

download selected

[ncnrdata/vsans/202011/28007/data/](#)

filename	date
sans71008.nxs.ngv	12/7/2020, 9:33:23 AM
sans71007.nxs.ngv	12/7/2020, 8:51:06 AM
sans71006.nxs.ngv	12/7/2020, 8:48:22 AM
sans71005.nxs.ngv	12/7/2020, 7:57:16 AM
sans71004.nxs.ngv	12/7/2020, 7:54:32 AM
sans71003.nxs.ngv	12/7/2020, 7:03:26 AM
sans71002.nxs.ngv	12/7/2020, 7:00:41 AM
sans71001.nxs.ngv	12/7/2020, 6:09:37 AM
sans71000.nxs.ngv	12/7/2020, 6:06:52 AM
sans70999.nxs.ngv	12/7/2020, 5:15:47 AM
sans70998.nxs.ngv	12/7/2020, 5:13:02 AM
sans70997.nxs.ngv	12/7/2020, 4:21:58 AM
sans70996.nxs.ngv	12/7/2020, 4:19:13 AM
sans70995.nxs.ngv	12/7/2020, 3:28:08 AM
sans70994.nxs.ngv	12/7/2020, 3:25:23 AM
sans70993.nxs.ngv	12/7/2020, 2:34:19 AM
sans70992.nxs.ngv	12/7/2020, 2:31:34 AM
sans70991.nxs.ngv	12/7/2020, 1:40:29 AM
sans70990.nxs.ngv	12/7/2020, 1:37:44 AM
sans70989.nxs.ngv	12/7/2020, 12:46:40 AM

- entry
  - DAS\_logs
  - control
  - instrument
  - reduction
  - sample
  - user
- collection\_time
- data\_directory
- definition
- duration
- end\_time
- experiment\_description
- experiment\_identifier
- facility
- program\_name
- start\_time
- title

```
{
  "note": "Proposal title",
  "long_name": "experiment title",
  "target": "/entry/DAS_logs/experiment/title",
  "shape": [
    1
  ],
  "dtype": "S37"
}
```

Exchange Constant Variation with Size

link to: /entry/DAS\_logs/experiment/title

Every motor position, sensor reading, and user input recorded here...



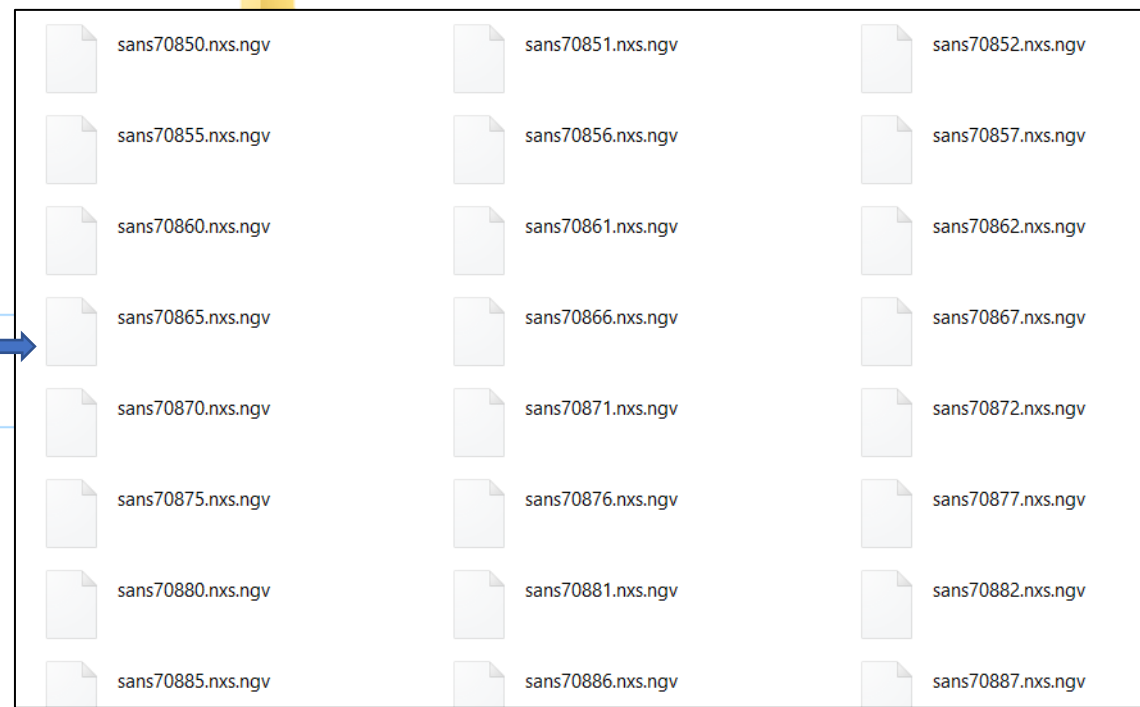
# Downloading Data (<ftp://ncnr.nist.gov/pub/ncnrdata/vsans/>):



- ★ Quick access
- Desktop ↗
- Downloads ↗
- Documents ↗
- Pictures ↗
- ncnrdata ↗

- 201610
- 201701
- 201702
- 201708
- 201801
- 201803
- 201808
- 201809
- 201810
- 201902
- 201903
- 201911
- 202001
- 202009
- 202011

and more folder listed by year + month date...



And this brings us to ***Data Reduction*** (IGOR, scripting, etc.) which we will work on at our next meeting.