



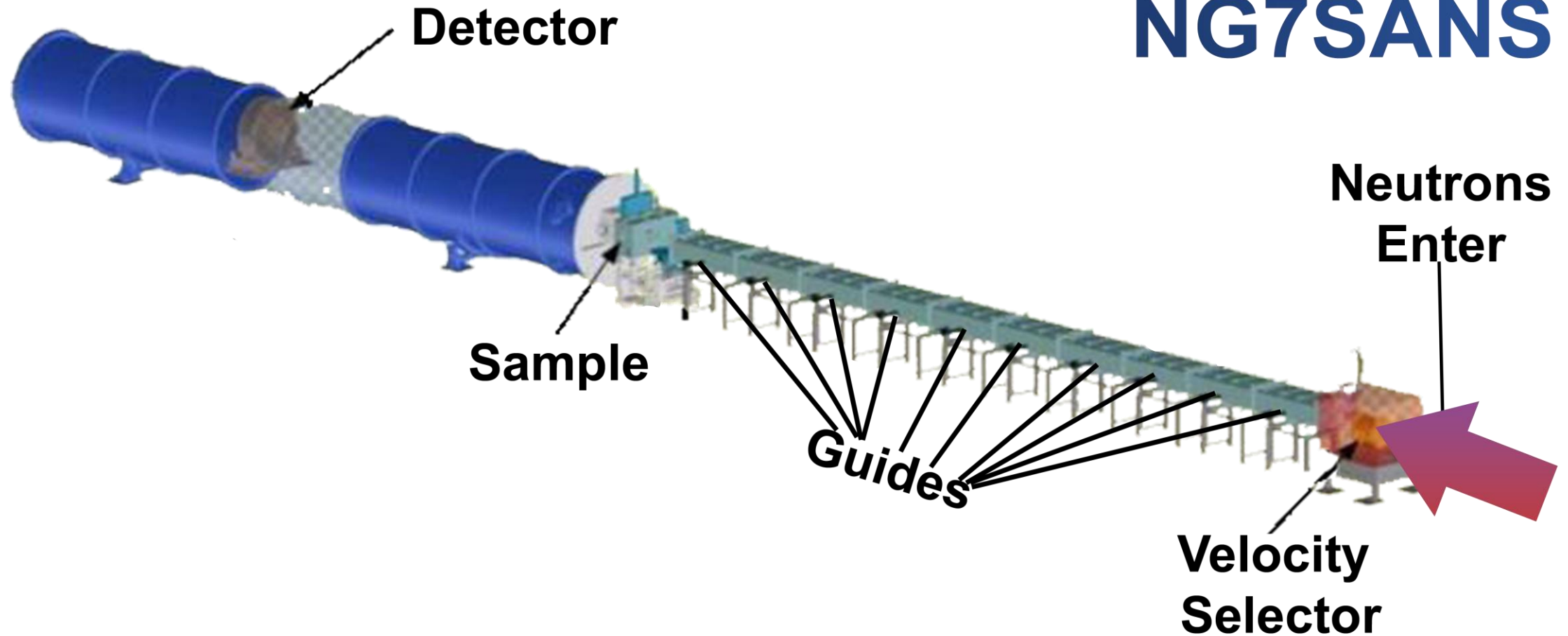
# SAS WEB CALC UPDATES

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MENTORS: JEFF KRZYWON AND ALAN MUNTER

# INSTRUMENT BASICS

# NG7SANS



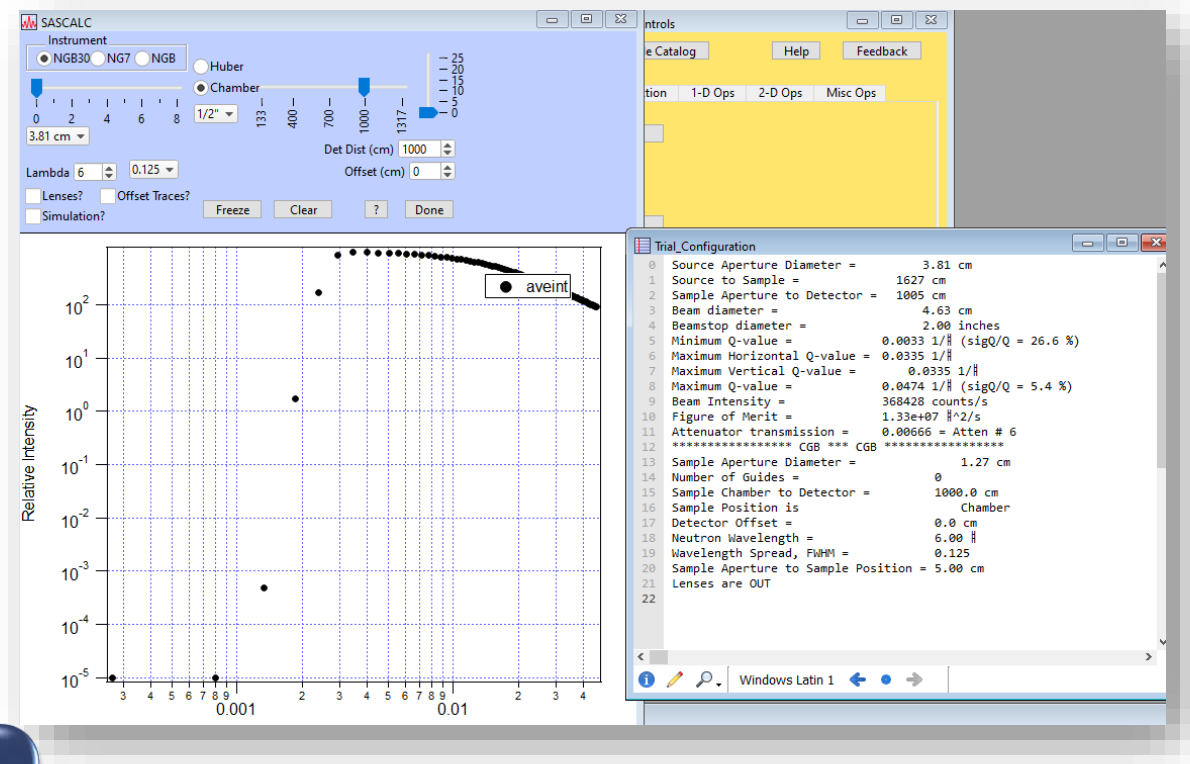
# PROJECT GOALS

Plan more efficient experiments

Allow anyone to access









Connect directly with instruments

Optimize Q range

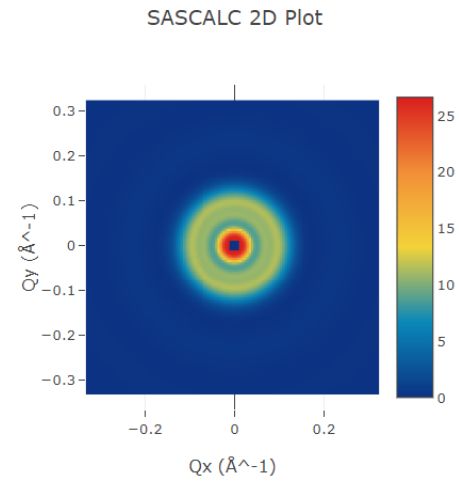
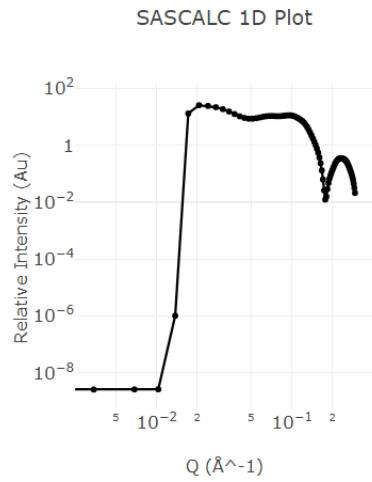


Existing Planning tool

# EXISTING TOOL VS SASWEBCALC

Existing Planning Tool	SasWebCalc
Desktop Only 	Access Anywhere(Website) 
Multistep installation 	No installation 
3 SANS Instruments	4 SANS Instruments + $\infty$ more 
1-dimensional graph	1- and 2-dimensional graph
Complicated model application 	Simple selection of any model 
No averaging method 	Select an averaging method

# Website



Parameter Changes

Results Displayed

Internet



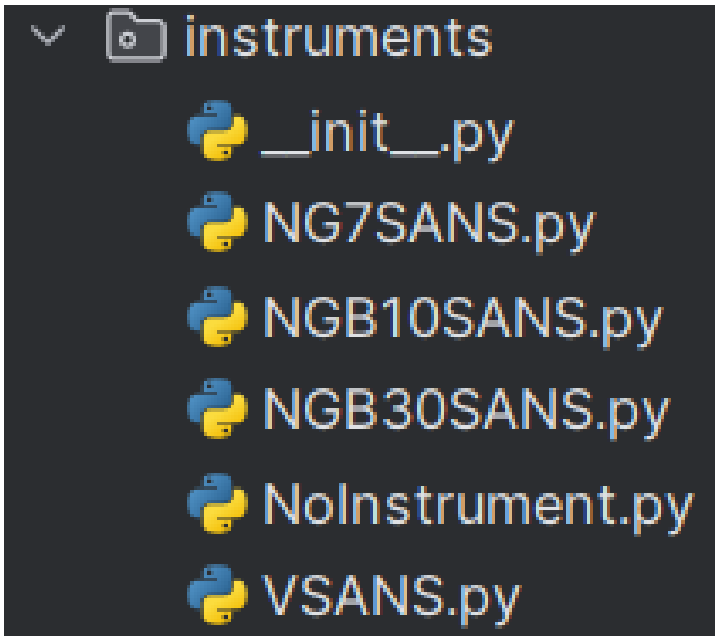
# Server



Parameters imported

Calculations

# Modularity



## Website

Page Loading

## File

Gets  
name\_shown  
from file

Instrument:

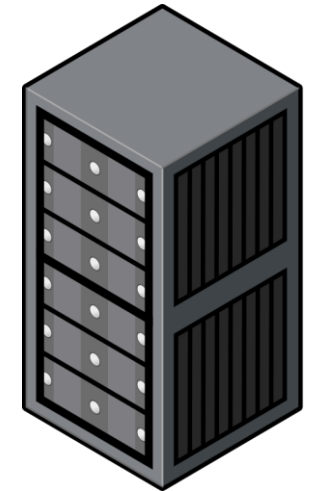
NG7 SANS

NGB 10m SANS

NGB 30m SANS

User-Defined Q-Range and Resolutions

VSANS



### Front Carriage Right Panel:

Lateral Offset (cm): 6.766

Q\_left (1/Å): 0.01875

Q\_right (1/Å): 0.1188

Match right edge to of MR:

```
def calculate_objects(self):
```

01/01/2023



# DOCUMENTATION

SASCALC on t

```
calculate_attenuation_factor(index=0)
```

Calculates the attenuation factors from the sample aperture diameter and returns the calculated value

- Usually run by the calculate attenuator number function

**Parameters:** `index` – The index of the value to find in the detectors array

**Returns:** Returns the float value of the calculated attenuation factor

**Return type:** Float

The screenshot shows the SASCALC web interface. At the top, there are dropdown menus for 'Instrument: NGB 30m SANS' and 'Model: bi'. Below that, there is a 'Circular' dropdown. The main content area is titled 'API' and contains a list of links: 'webcalc.python', 'webcalc.webcalc', 'Full AF', and a list of 'webcalc' links. A sidebar menu on the left contains sections: 'SETUP', 'KNOWLEDGEBASE', 'MISCELLANEOUS', and 'INDICES AND TABLES'. The 'Example Method' text is overlaid on the sidebar.

Example Method

n

# MY CONTRIBUTION

Transferred original code from JavaScript to Python

Added all instruments

Created the modular interface

Documentation of files

Setup the server and docker container

Instrume

• `webcalc.python.instruments.NoInstrument`

◦ `NoInstrument`

- `NoInstrument.__init__()`
- `NoInstrument.create_f_sub_s()`
- `NoInstrument.create_intensity2d()`
- `NoInstrument.get_js_params()`
- `NoInstrument.load_params()`
- `NoInstrument.python_return()`
- `NoInstrument.sas_calc()`
- `NoInstrument.set_q_max()`



ions



## NIST CENTER FOR NEUTRON RESEARCH

### SASCALC on the Web



Instrument:  Model:  Structure Factor:  Averaging Method:

# Live Demo!

[Webcalc.ncnr.nist.gov](http://Webcalc.ncnr.nist.gov)

# NEXT STEPS

Q Range  
Optimization

Connect to the  
instruments  
directly to give  
them configs

More instruments

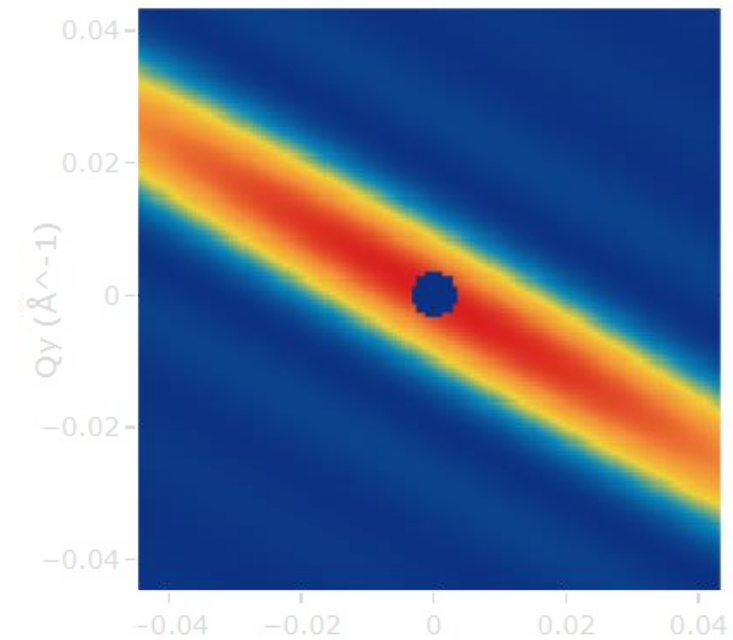
Polydispersity and  
magnetism

Beta  
approximation

# SPECIAL THANKS

- Jeff Krzywon
- Alan Munter
- Julie Borchers
- Leland Harriger

SASCALC 2D Plot



SASCALC 1D Plot

SASCALC 2D Plot



**QUESTIONS/  
COMMENTS**

**CENTER FOR HIGH RESOLUTION NEUTRON SCATTERING**

**NIST**

