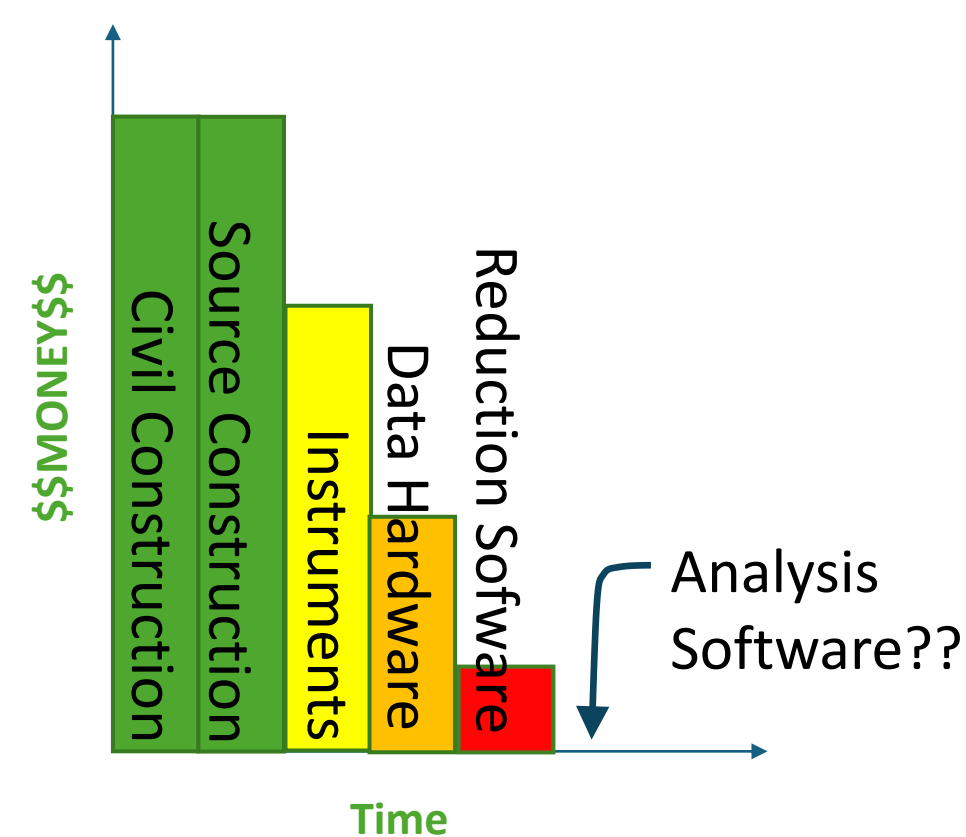


Addressing the resource problem through community: The SasView Collaboration

The Problem Statement



Analysis Software - Who's Job is it Anyway?

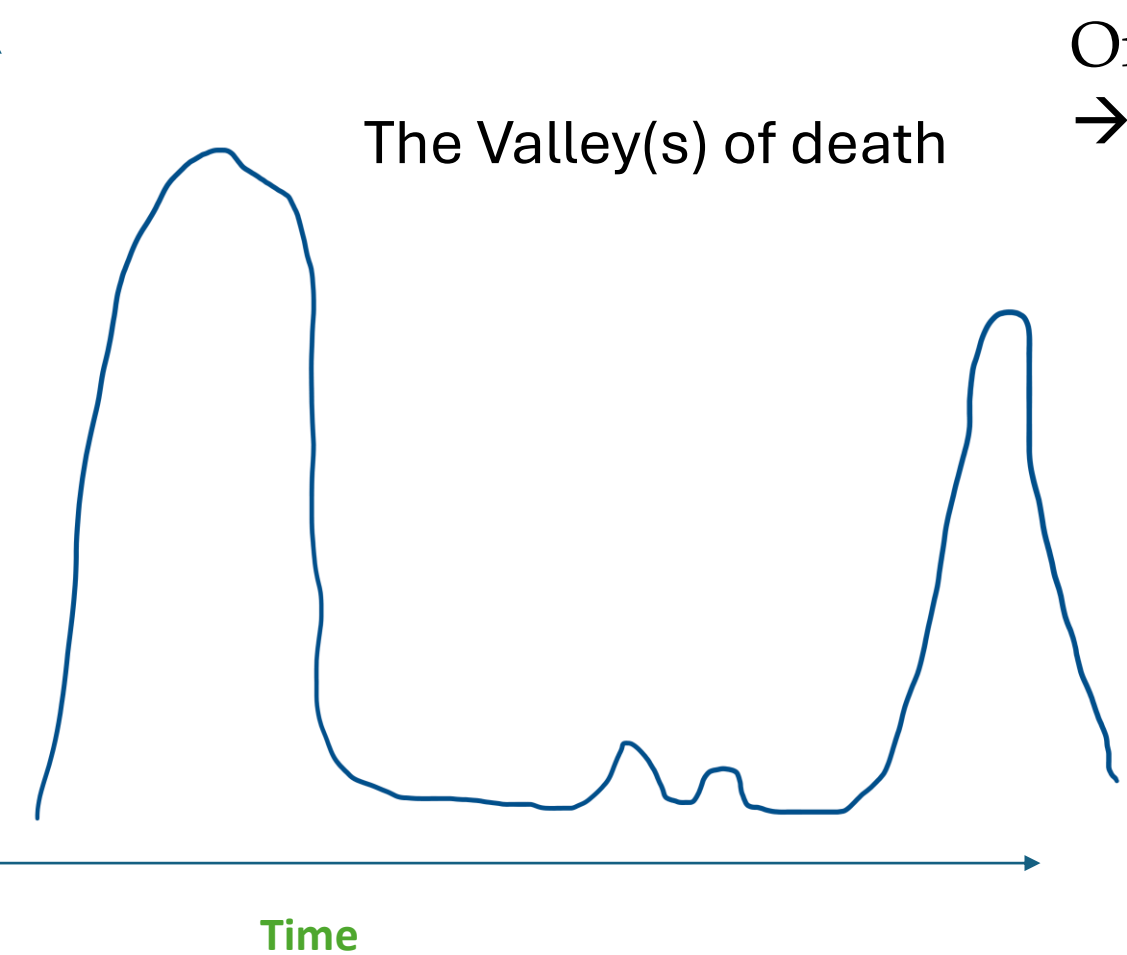
Scattering is an analysis tool and part of providing the tool should be the necessary software
→ the FACILITY'S JOB? Last priority with very limited funding left

Analysis is where the science is
→ the USER'S JOB? Today's analysis is beyond the skill set of most users

Or maybe
→ The Domain Science funding agencies?

Facility directors' discretion, NIH, NSF, DOE, etc.

Special funding (grants) do no fund long term maintenance and ongoing development. They fund "big new (transformative) ideas"



The unbounded problem

Fundamentally all the elements listed in the bar chart are relatively well-defined problems...

EXCEPT ...

Analysis Software is really *unbounded*. The needs are nearly infinite and constantly evolving.

HOWEVER --- Analysis as defined here is also uniquely universal and ripe for collaborative pooling of finite resources

- A way to focus limited resources on top priorities (most useful to the science being done) in a world of infinite possibilities
- A way to harness funding for bold new ideas without losing the investment in the valleys of death
- A way to provide sustained maintenance and development in an uncertain funding environment (thriving through the famines)

The SasView approach: vertical and horizontal **COLLABORATIONS**

- **Facilities** provide foundational support through participation of data and instrument scientists
- **Grants and other projects** provide "bold new functionality"
- **Community**, writ large, helps provide support and functionality
- New ideas tested and developed as before by individuals or larger groups (the community)
- Once validated and deemed ready for the larger community these groups provide resources (their labor) to integrate while active developer community helps with training on where things go and on parts of interest to them (collaborative)

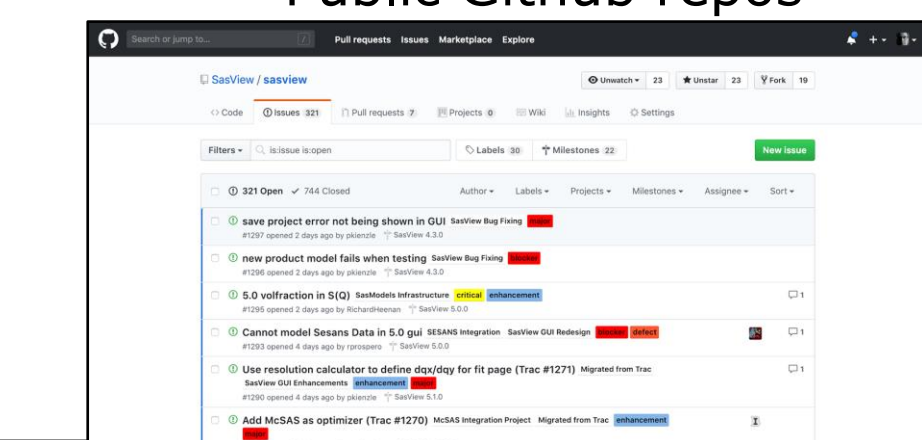


Open, Collaborative, Community Development

Code is **open source**
publicly hosted at Github
Released under **BSD 3-clause license**

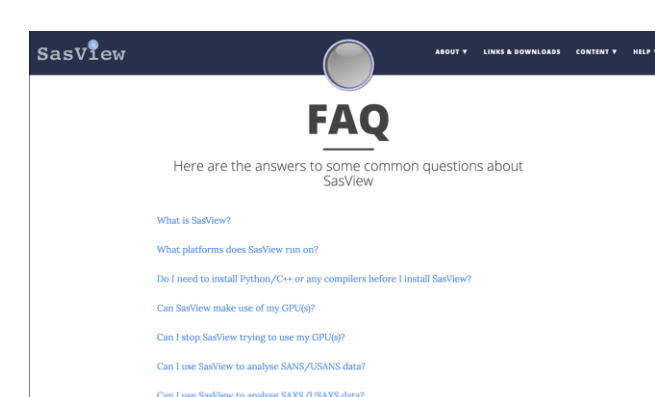
<http://github.com/SasView>

Code Hosting, **Issue Tracking**, Developer Wiki & CI on Public Github repos



Rolling 5 Year Roadmap
(Zenodo) DOI for each release

- Website <http://www.sasview.org>
- Documentation: in-program & online
- Written Tutorials
- Video Tutorials (YouTube)
- scattering schools/workshop
- E-learning (starting)
- Model Marketplace
- Twitter
- Bootcamps & regional workshops
- Slack
- help@sasview.org
- users@sasview.org
- developers@sasview.org



Collaboration also builds Community

- Twice monthly zoom calls
- Regular 'camps' & 'hackathons'
- Developer's mailing list
- SasView slack
- Expertise sharing and helping
- Small leadership team to facilitate



Ask not what the community is going to do for you,
ask what you can do for the community

No MOU ... all are invited and welcome

Two Basic "Rules"

She who pays the piper chooses the tune

Those who bring the resources (time and effort, or funds to buy time and effort) choose what to work on.

And ...

You cannot break existing experiences ...

- New dependencies vs long term maintenance (sustainability)
- Code quality vs long term sustainability
- Changing/degrading the current user experience for the existing user base

<http://marketplace.sasview.org>

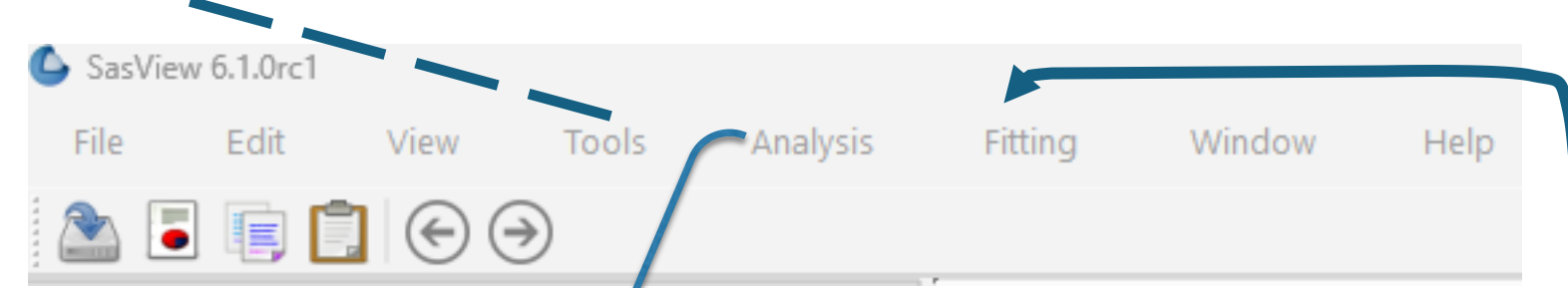
Original put together by an ISIS Summer Student Lewis O'Driscoll

Tools

- Data Operation
- SLD calculator
- Density/Volume calculator
- Kiessig Thickness Calculator
- Q Resolution Estimator
- Orientation Viewer
- Slit Size Calculator
- Python Shell/Editor
- Image Viewer
- File Converter
- Generic Scattering Calculator
- MuMag
- Shape2SAS

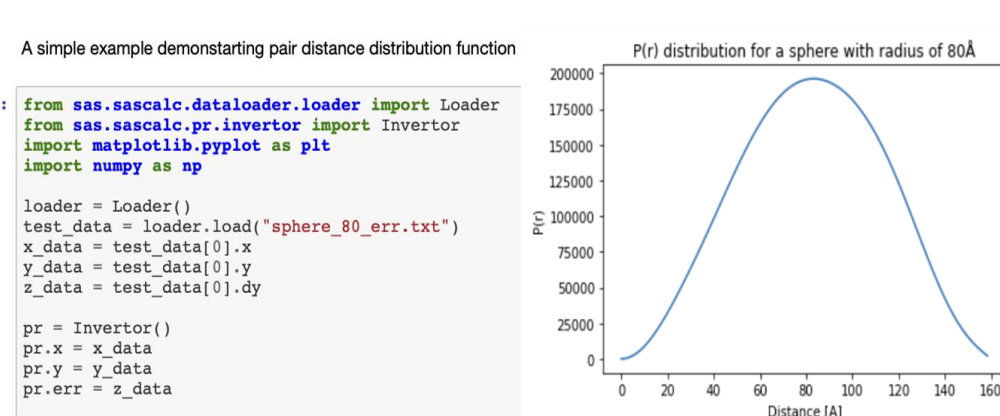
The SaView Package

Perspectives on the data



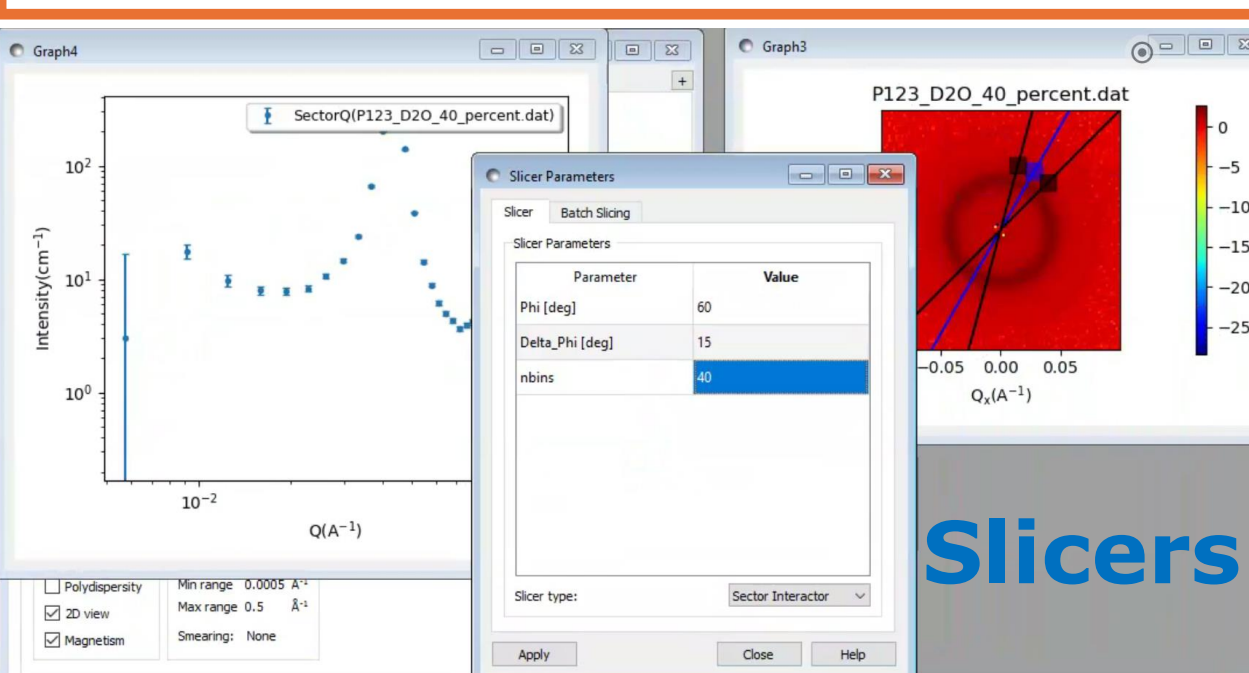
- Correlation Function
- Invariant
- Fitting
- Size Distribution
- Pr Inversion

Jupyter Notebooks and Command Line

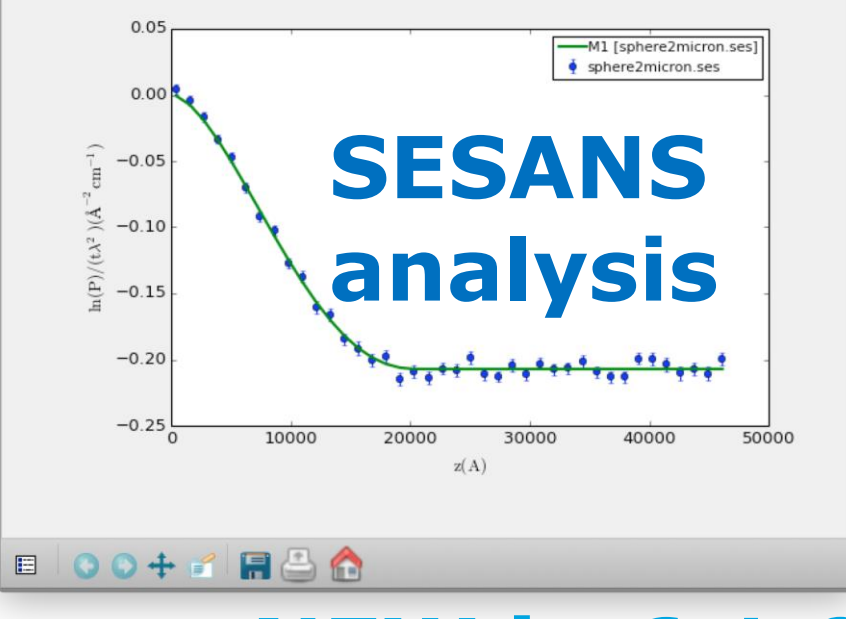


Data Management

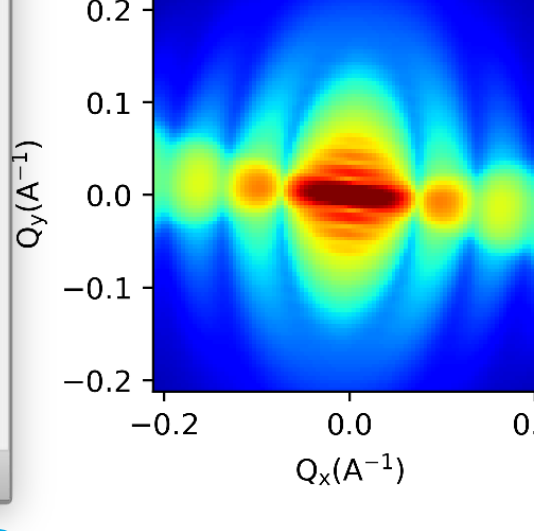
- Most all 1D data types supported. Standard 2D also
- Some image and odd data supported through converters
- All data output in NXcanSAS format.
- Calculated curves associated with data (PQ, SQ, desmeared model, etc) accessible individually.
- Project saving capabilities (currently a bit fragile)



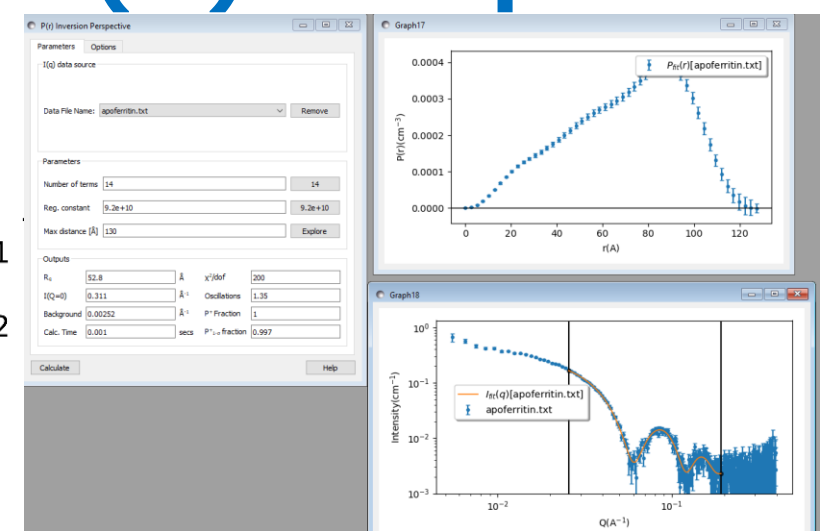
1D and 2D analysis



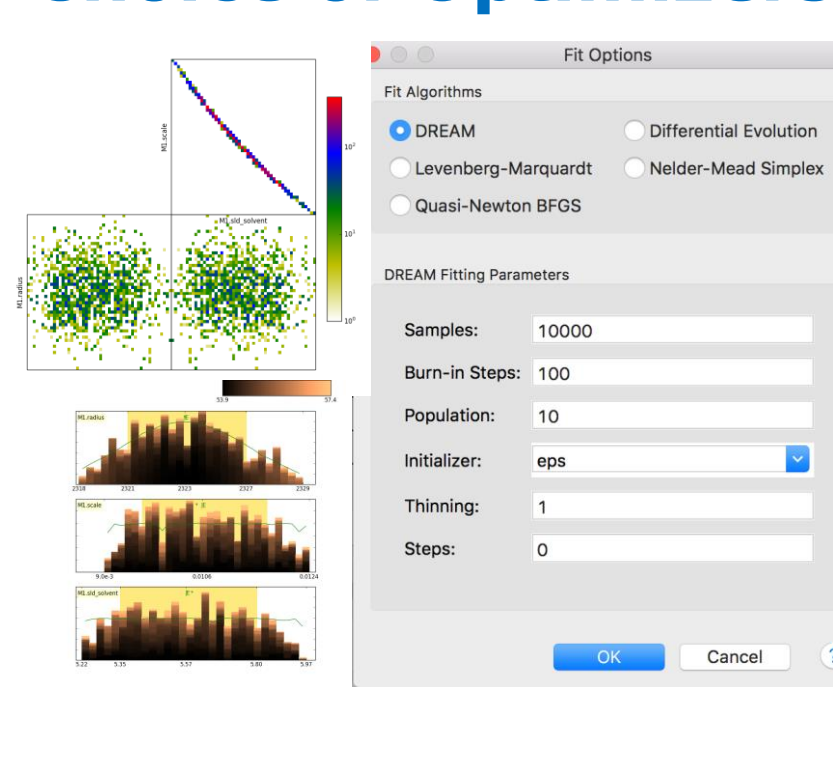
SESANS analysis



P(R) Perspective

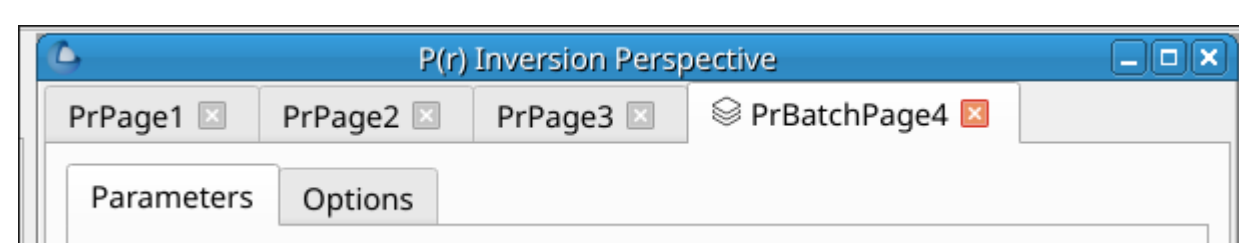


Choice of Optimizers

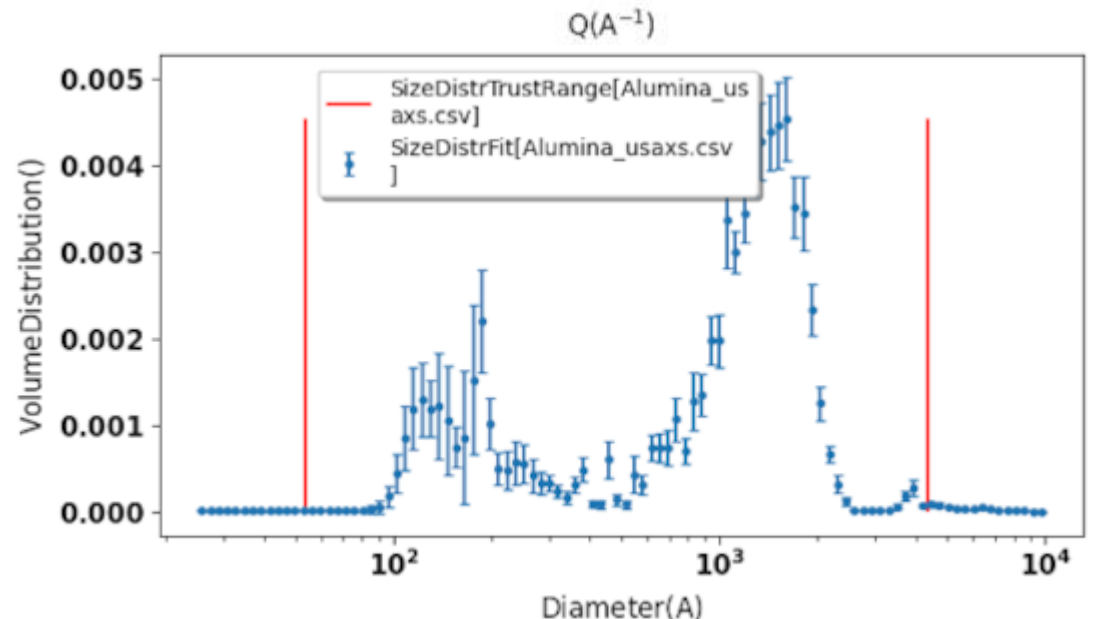
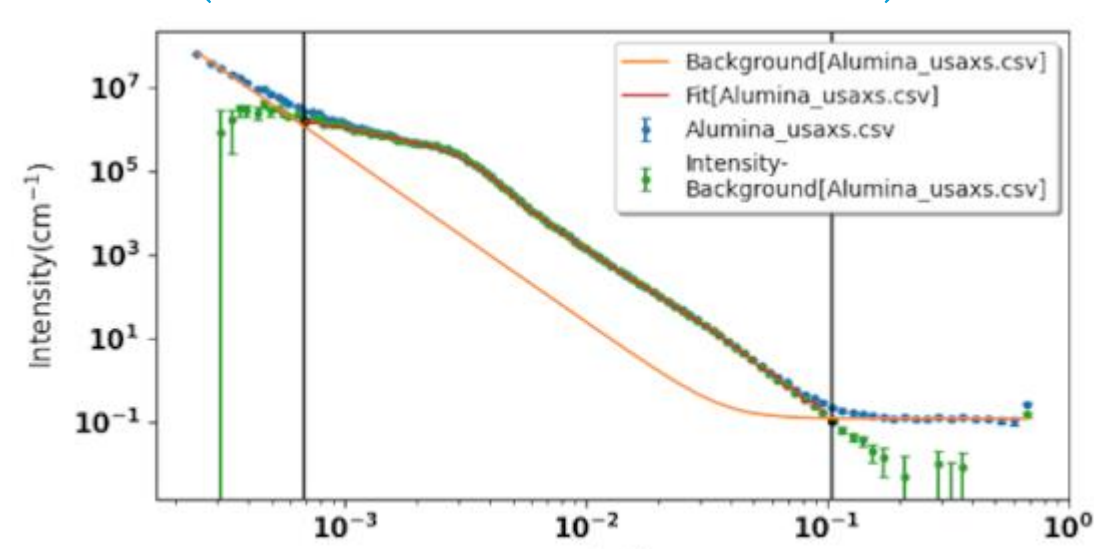


NEW in 6.1.0

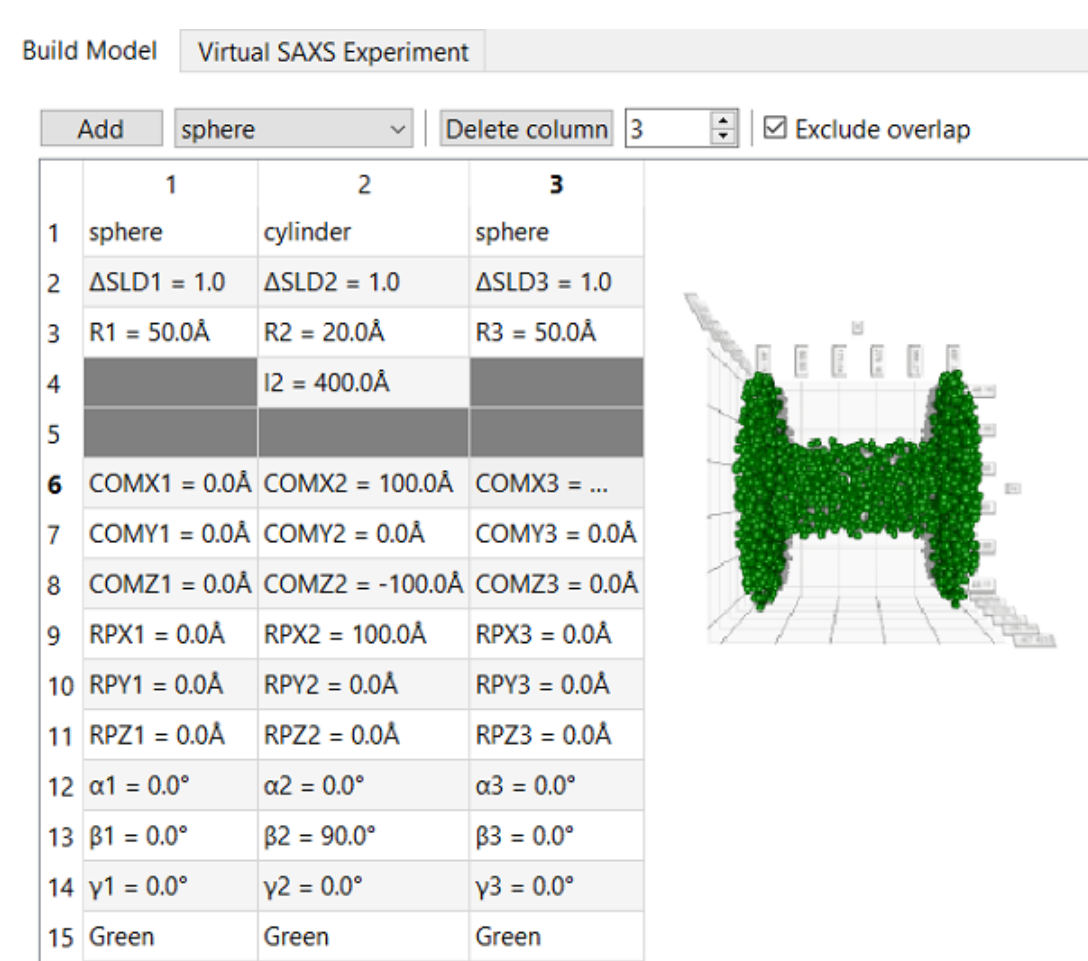
P(R) inversion is now tabbed, ready for batch runs (ISIS)



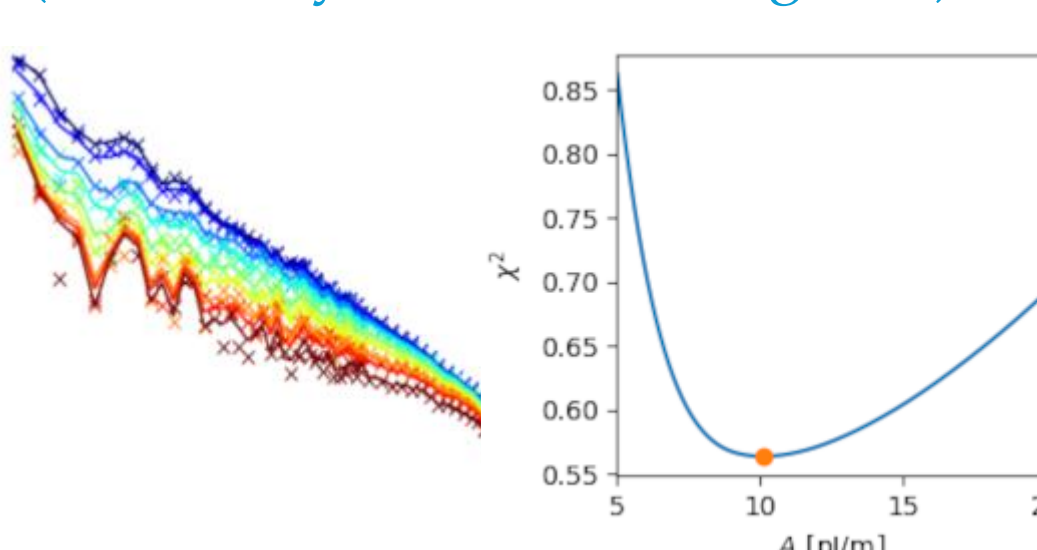
Size Distribution Analysis (ORNL, Princeton, NIST)



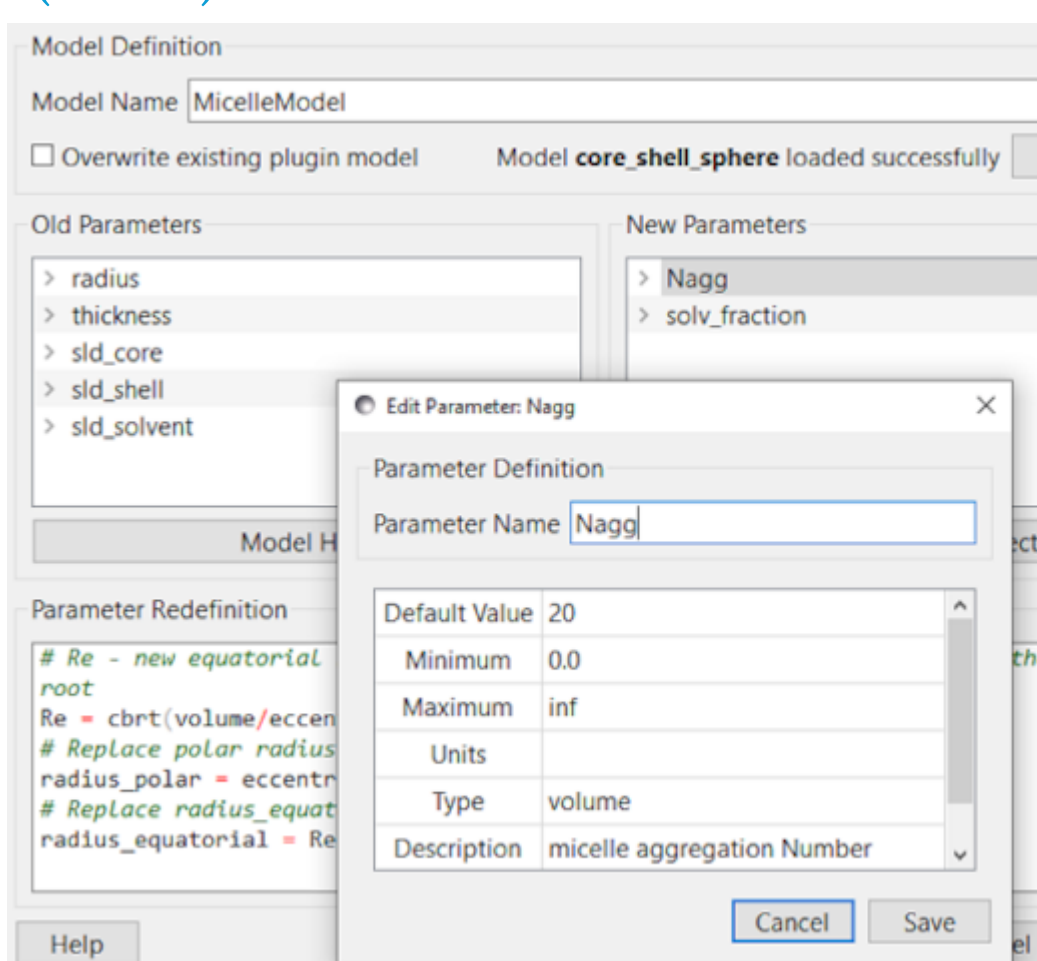
A version of the Shape2SAS tool (Copenhagen University/NIST)



A version of the MuMag tool (University of Luxembourg/ISIS)



New Reparameterization model Editor and improved Model Editor (NIST)



CURRENT PROJECTS

Ongoing major refactoring:

- Data loading, handling and manipulation infrastructure
- Plotting infrastructure

Major current effort: Magnetic and polarized beam SANS and anisotropic data analysis



HISTORY/STATUS

- 2006; originates in NSF DANSE project
- 2013; transitions into a community project
- 2016; Sine2020 project funded
- 2022; Essentially a "volunteer army"

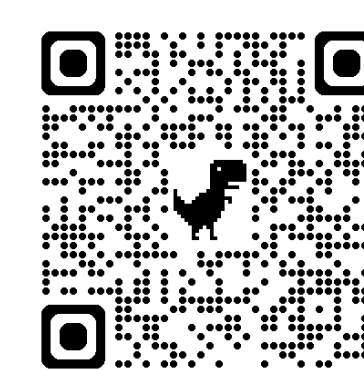
- 80+ contributors from 15 organizations, including 6 Universities... and growing (~10-15 active at any one time)
- 1 to 2 releases/year (6.1 JUST RELEASED)
- Documentation/tutorial projects ongoing
- Usage? Seems to be "everywhere?"

SOME CHALLENGES

- The price of success: Building community resources is hard (Help needed!)
- Professional effort suggest project is funded, even well funded.
- Hard to persuade non-coder experts of the huge value of their contributions
- Current size of code base is a barrier to new volunteer coders
- Hard to keep up with increasing security issues given resources

CONTINBUTOR CAMP (A Hackathon Week!)

WHEN: November 11-17, 2025 (7 days of fun!)
WHERE: Garching, Germany at TUM



COME JOIN THE PARTY!!