



Small Angle
Scattering
Analysis
Toolkit

SASVIEW

Agenda



1. Debunk the myth of the SasView project
2. Some project history
3. CURRENT status of the project and how everyone here has a part to play
4. A review of the relatively rich resources available in the SasView universe
5. Answers to a few questions received

Reality check



Myth:

SasView is a well-funded, professionally run organization and project

Reality:

- There is no official "organization"
- Usually no explicit funding
- Few if any whose job specifically requires them to work on SasView

The volunteer army



2. Some History

Some History



- 2006; originates in NSF *DANSE* project as SansView
- 2013; transitions into a community project
 - First Code camp at NIST April 2013
- 2015; move to github and release 3.0
- 2015; rename to SasView – **Words matter**
- 2016; Sine2020 project funded through ESS
- 2016; release 4.0 in October
- 2019; release 5.0 in May
- 2020; Essentially a “volunteer army”
- 2020 – **PANDEMIC**
- 2024; release 6.0



Pictures from Camps: VI, VIII, X, XII

www.sasview.org

Some History



SINCE TRANSITIONING TO THE COMMUNITY

- Code camps: every year (twice in 2016, 2017)
 - NIST, ISIS, ESS(DMSC), Delft, SNS, ILL/ESRF, ESS/DMSC, ESS/Lund, ILL/ESRF,
- 2020 = Caltech code camp cancelled due o pandemic
- Small camps 2022 and 2023 (poland; ISIS)
- 2023; Rebranded to Contributor Camp – Words matter
- Jan 2024 Contributor camp at U. Del.



Pictures from Camps: VI, VIII, X, XII

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3. Current Status

Current Status of SasView



- 80+ contributors from 15 organizations, including 6 Universities so far and growing (~10-15 active at any one time)
- 1 to 2 releases/year (6.1.1 JUST RELEASED)
- Documentation/tutorial projects ongoing
- Usage? Seems to be "everywhere?"
- Lots of "complements" (a bit scary)
- Publications? > 100/year ?

SasView is an aspirational project



Pictures from Camps: VI, VIII, X, XII

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The SasView Approach

An
“open, collaborative, community development”
platform for
Small Angle Scattering Data Analysis

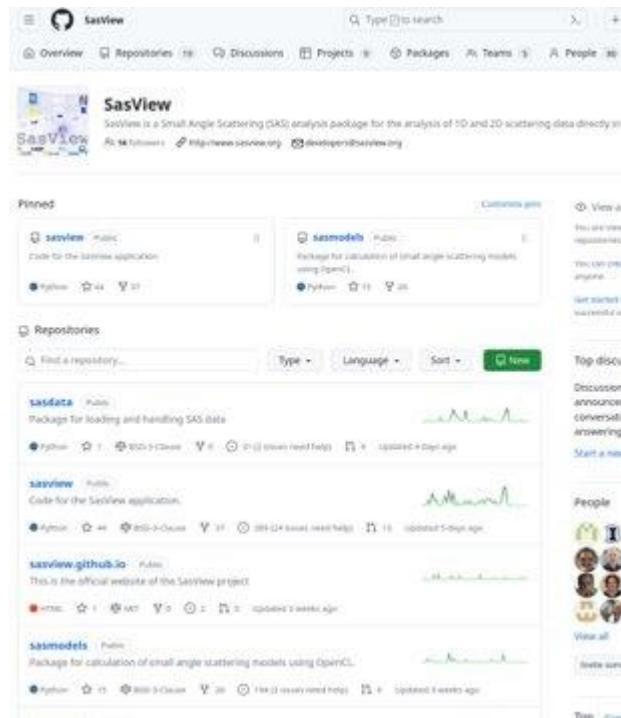
Open, Collaborative, Community Development



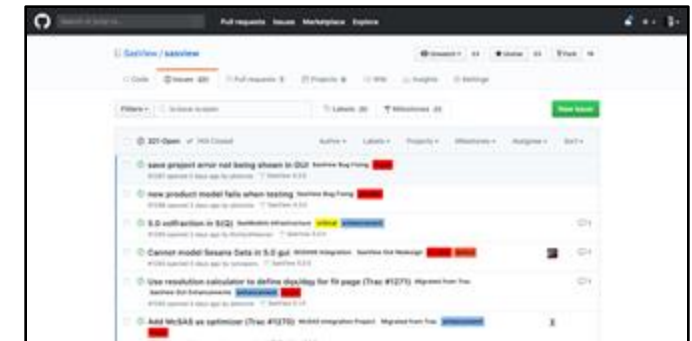
Code is **open source** and **publicly hosted** at Github
Released under **BSD 3-clause license**

(Zenodo) DOI for **each release**
Rolling 5 Year Roadmap

Code Hosting, Issue
Tracking, Developer Wiki & CI on



<https://www.sasview.org>



<https://github.com/SasView>



Open, Collaborative, Community Development



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



**Collaboration also builds
Community**



Community Development Rules

No MOU ... all are invited and welcome

Two Basic Rules:

- Those who bring the resources (time, effort, funds) choose what to work on
- but cannot break existing experiences ...

What will SasView do in the future?



Whatever the community
contributes. (That's YOU)

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

The community needs you

Contributing to SasView

You don't have to be coding ninja to contribute!



- Respond to queries posted to help@sasview.org or github
- Teach others how to get the best from SasView
- Write and improve documentation
- Write and record tutorials
- Test SasView (over and over!) and write bug reports
- Provide new plugin models
- Deploy and improve automated testing
- Review the code contributions of others
- Develop code in Python3/C and PySide2/Matplotlib
- Server and Github admin task
- Develop/improve databases (e.g. marketplace) etc.



www.sasview.org/contribute



4. A review of resources

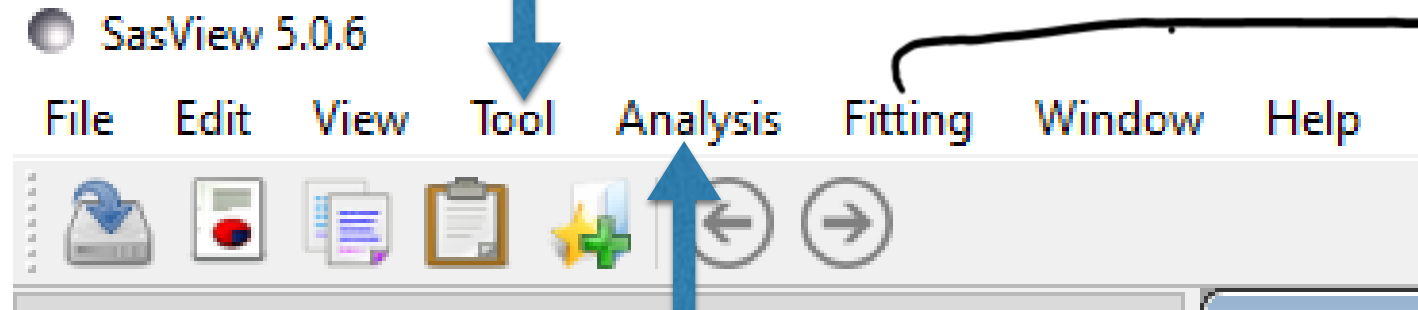
SasView Toolkit for SAS data Analysis



Tools

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

Perspectives on the data



Analysis

- Fitting
- Invariant
- Pr Inversion
- Correlation Function

Resources, Education & Outreach



- Website
- Documentation
- Written Tutorials
- Video Tutorials (YouTube)
- Taught courses
 - Scattering schools
 - University courses
- E-learning
- Twitter LinkedIn
- Slack
- Mailing Lists
- Bootcamps & Regional Workshops
- (Marketplace)



Go to each FitPage in turn and select the **core, shell, sphere** model. The three theory curves will be added to the graph.



Enter the following SLD values in the appropriate FitPage's:

Contrast / SLD	slf core	slf shell	slf solvent
core	$+6.36 \times 10^{-6} \text{ \AA}^{-2}$	$+0.42 \times 10^{-6} \text{ \AA}^{-2}$	$-0.28 \times 10^{-6} \text{ \AA}^{-2}$
shell	$+6.36 \times 10^{-6} \text{ \AA}^{-2}$	$+0.42 \times 10^{-6} \text{ \AA}^{-2}$	$+6.66 \times 10^{-6} \text{ \AA}^{-2}$
slip	$-0.55 \times 10^{-6} \text{ \AA}^{-2}$	$+0.42 \times 10^{-6} \text{ \AA}^{-2}$	$+6.66 \times 10^{-6} \text{ \AA}^{-2}$

The objective of this simultaneous fit will be to find common values for the radius (of the droplet cores) and thickness (of the surfactant layer) parameters that provide a good solution to all three datasets.

(Depending on how meticulous the person making the samples was, it might also be possible to find a common scale parameter, but for this example we shall assume that the volume fraction of droplets in each sample was different.)

We now need to tell SasView that the radius for the 'core' contrast dataset is the same as the radius for the 'shell' contrast dataset and is the same as the radius for the 'slip' contrast dataset, and so on. This is called introducing constraints. But you can only constrain parameters that are free to optimise. So in each FitPage, check the radius and thickness parameters. However, we also need to optimise the scale and background parameters so check those too.

Tip: Always check the parameters you want to constrain in their respective FitPages before opening the Constrained or Simultaneous Fit page.

Now go to the Menu Bar and click **Fitting** followed by **Constrained or Simultaneous Fit**.

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In the **Const & Simul Fit** page, check the boxes under **Model Title** (or just **Select all**) to select those theories that you want to constrain constraints for. For this example, check all three theories. Then, in the section of the page called **Fit Constraints**, check the **Yes** radio button to **Add Constraint**.

To constrain all identically named parameters to fit simultaneously to the same value across all the selected theories we can use the **Easy Setup** drop-down buttons. There are, however, several ways that we can set up the constraint equalities. Here we shall use the 'core' contrast (M1) as the reference. So set **M2=M1** and click **Set M**. Then set **M3=M1** and click **Set M**.



Tip: If you need to scale parameter values between FitPage's then use the free-form constraint box below **Easy Setup**. The right-hand side of the equality can be of the form **scale * [M] parameter name**.

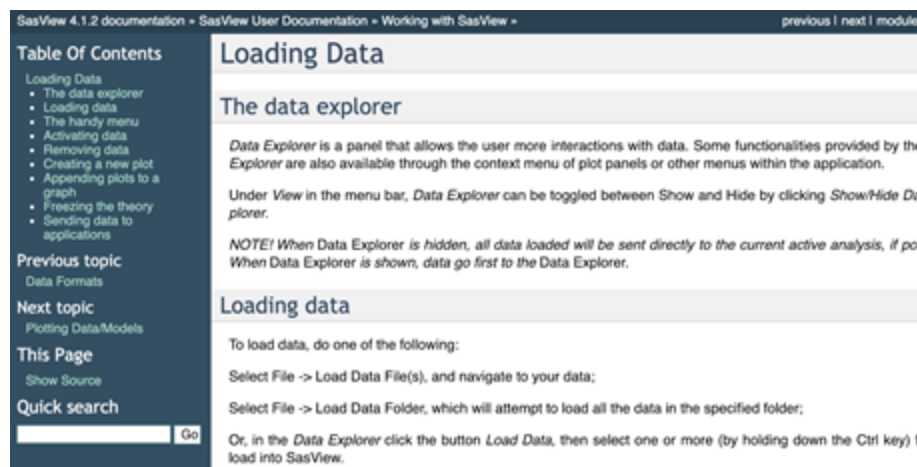
As we are assuming the volume fraction of droplets in each sample was different, remove the two scale constraints. And because the different datasets represent samples containing different amounts of H₂O (and therefore have different incoherent scattering contributions), also remove the two background constraints.

But as it is the 'shell' contrast (M1) which should provide the most sensitivity to the thickness parameter, we need to change the constraint equalities dealing with thickness to read:

M2 thickness = M1 thickness
M3 thickness = M1 thickness

So we now have constraints that look like this:

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Loading Data

The data explorer

Data Explorer is a panel that allows the user more interactions with data. Some functionalities provided by the Explorer are also available through the context menu of plot panels or other menus within the application.

Under **View** in the menu bar, Data Explorer can be toggled between **Show** and **Hide** by clicking **Show/Hide Data Explorer**.

NOTE! When Data Explorer is hidden, all data loaded will be sent directly to the current active analysis, if possible. When Data Explorer is shown, data go first to the Data Explorer.

Loading data

To load data, do one of the following:

Select **File** -> **Load Data File(s)**, and navigate to your data;

Select **File** -> **Load Data Folder**, which will attempt to load all the data in the specified folder;

Or, in the Data Explorer click the button **Load Data**, then select one or more (by holding down the **Ctrl** key) files to load into SasView.

Resources, Education & Outreach


- Website
- Documentation
- Written Tutorials
- Video Tutorials (YouTube)
- Taught courses
 - Scattering schools
 - University courses
- E-learning
- Twitter
- Slack
- Mailing Lists
- Bootcamps & Regional Workshops
- (Marketplace)

SasView ABOUT LINKS

Tutorials:

- [Old SasView tutorial \(PDF\)](#) - still useful
- [Getting started with SasView \(PDF\)](#)
- [Basic 1D Fitting in SasView \(PDF\)](#) - for versions 3.x/4.x
- [Simultaneous 1D Fitting in SasView \(PDF\)](#) - for versions 3.x/4.x
- [Correlation Function Analysis in SasView \(PDF\)](#) - for version 4.x

Go to each FitPage in turn and select the **core, shell, sphere** model. The three theory curves will be added to the graph.



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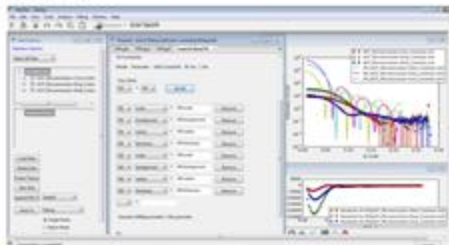
We now need to tell SasView that the radius for the "shell" contrast data is contrast dataset, and so on. This is constrain parameters that are free to thickness parameters. However, we parameters so check those too.

Tip: Always check the parameters in before opening the Contrasted or Set


Now go to the Menu Bar and click **Fit**

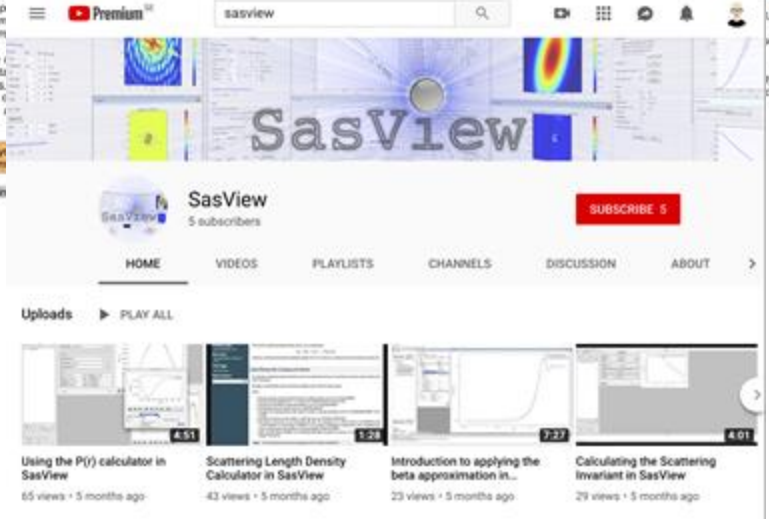
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SasView 5 subscribers

HOME VIDEOS PLAYLISTS CHANNELS DISCUSSION ABOUT

Uploads ▶ PLAY ALL

- Using the P(r) calculator in SasView 65 views • 5 months ago
- Scattering Length Density Calculator in SasView 43 views • 5 months ago
- Introduction to applying the beta approximation in... 23 views • 5 months ago
- Calculating the Scattering Invariant in SasView 29 views • 5 months ago



There are a lot and you may forget where to find them

- Website
- Documentation
- FAQ
- Written Tutorials
- Video Tutorials (YouTube)
- E-learning
- Twitter LinkedIn
- Slack
- Help and User lists
- Developer lists
- Bootcamps & Regional Workshops
- Model Marketplace
- Github: code, wiki, issues and discussions

ONE LINK TO RULE THEM ALL

www.sasview.org



5. Answers to a few pre-posed questions

RESPONSE TO SOME QUESTIONS



QUESTION:

Is it possible to convert nm^{-1} into Angstrom $^{-1}$

RESPONSE TO SOME QUESTIONS



QUESTION:

- How can I fit SAS data sequentially with specific parameters varying
- How can I then plot of that parameter w.r.t file number etc

RESPONSE TO SOME QUESTIONS



QUESTION:

How can I co-refine SANS and SAXS data (fitting one model simultaneously to SAXS and SANS data?)

RESPONSE TO SOME QUESTIONS



QUESTION:

OTHERS:

ContributorCampXIV

Paul Butler edited this page last week · [30 revisions](#)



Contributor Camp XIV Planning

Where and When

November 11-17 2025 at the Technical University of Munich

The fourteenth SasView Contributor Camp (formerly known as SasView Camp) will be held in Garching, Germany, starting Nov 10 on [the Technical University of Munich \(TUM\)](#) campus at the [Heinz Maier-Leibnitz Zentrum Neutronen für Forschung und Innovation](#) and the [ESS](#). The camp will run from the morning of Tuesday Nov 11 through Monday afternoon Nov 17. For registration, please see the [registration page](#).

Overview

As usual, the camp will cover customary topics of addressing issues, training new contributors, adding new features, editing/adding documentation, and tutorial, updating website and/or other services, and holding discussion round tables around GUI or code designs or more generally.

For this camp there will also be a serious emphasis on improving support for the hard matter community in SasView. Something to note is that many of the needs of the hard matter community are relevant to materials and soft matter communities as well, such as the ability to fit 1D data from anisotropic scattering or handling Qz properly when analyzing 2D anisotropic data. Another area of emphasis will be in improving support for the [life sciences](#).

ONLY ~ 2+ WEEKS AWAY

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