

SESANS Reproducibility Working Group

CanSAS-XII workshop (SAS2022: Campinas, Brazil)

Presenter: Steven Parnell (TU Delft)

Group chair: Gregory Smith (ISIS Neutron and Muon Source)

SESANS Reproducibility Working Group

Background

- Group of instrument scientists and users of spin-echo SANS (SESANS) technique
- Formed in 2021
- Inaugural meeting in March 2021
- Subgroup of canSAS Reproducibility and Reliability Working Group
 - Broadly the same aims, only for SESANS rather than general SAS

SESANS Reproducibility Working Group

Mission

Spin-echo small-angle neutron scattering (SESANS) is a variant of small-angle neutron scattering that uses the Larmor precession of polarised neutrons to study the structure of materials in real space and up to length scales of some ten micrometer.

The mission of this group is to achieve SESANS measurements that provide data on an absolute scale independent from the used instrument. They do this by discussing the development of standard calibration samples and considering issues of reproducibility between different instruments, ensuring that data are trustworthy, reliable, and comparable.

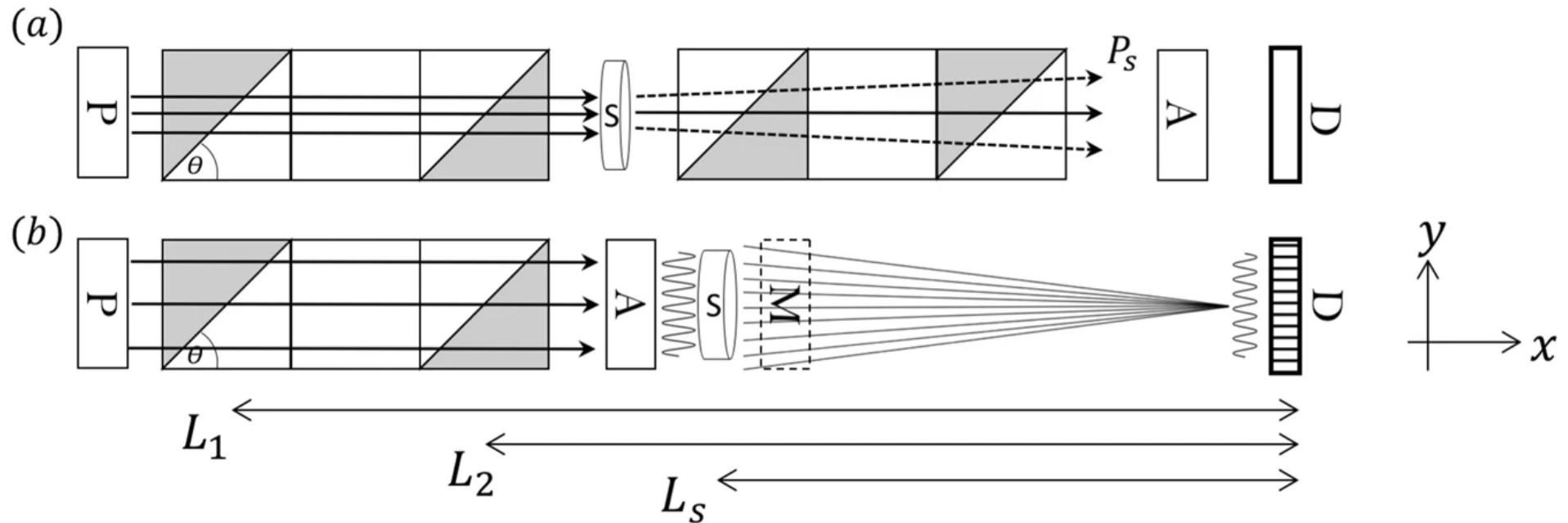
SESANS Reproducibility Working Group

Members

- Wim Bouwman (TU Delft)
- Robert Dalglish (ISIS Neutron and Muon Source)
- Henrich Frielinghaus (Jülich Centre for Neutron Science, MLZ)
- Fankang Li (Oak Ridge National Laboratory)
- Andrew Parnell (The University of Sheffield)
- Steven Parnell (TU Delft)
- Roger Pynn (Indiana University Bloomington)
- Gregory Smith (Chair, ISIS Neutron and Muon Source)

What is SESANS?

Technique overview



(a) **The SESANS setup**, where different shaded areas correspond to different magnetic field directions. The scattered neutrons are indicated by the dashed lines. (b) **The SEMSANS setup**. The second WP has higher and opposite field compared with the first one. After the sample, only the trajectories of the scattered neutrons captured by a specific pixel of the detector are plotted for clarity. Boxes labeled with A, P and D indicate the neutron polarization analyzer, polarizer and detector. M denotes the neutron monitor right behind the sample used for the transmission measurement when needed.

(From Li F *et al.* 2019 Data Correction of Intensity Modulated Small Angle Scattering *Scientific Reports* 9 8563 [doi:10.1038/s41598-019-44493-9](https://doi.org/10.1038/s41598-019-44493-9))

Current SESANS instruments

- Larmor instrument at ISIS Neutron and Muon Source (UK) ISIS Larmor
- SESANS instrument at Reactor Institute Delft, TU Delft (The Netherlands)
Research instruments SESANS
- SESANS at Oak Ridge National Lab (USA) SESANS 1-D Ultra Low Q Small Angle Neutron Scattering

SESANS Reproducibility Working Group

Activities so far

Page on canSAS wiki

Mailing list for interested researchers

Online meetings of working group

Creation of data repository

Measurements of potential standard samples (at ISIS and Reactor Institute Delft)

Web presence on canSAS wiki

The screenshot shows the canSAS wiki page for the SESANS Reproducibility Working Group. The page features a search bar at the top, a navigation menu on the left, and a main content area with a table of contents, a mission statement, and a list of members. A sidebar on the right contains additional links and categories.

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SESANS Reproducibility Working Group

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The spin-echo SANS (SESANS) working group is a subgroup of the canSAS Reproducibility and Reliability Working Group.

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Members

- Wim Bouwman (TU Delft)
- Robert Delaback (ISIS Neutron and Muon Source)

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- [canSAS-XI](#)
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- [canSAS-IX](#)
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[https://cansas.org/wgwiki/index.php/SESANS Reproducibility Working Group](https://cansas.org/wgwiki/index.php/SESANS_Reproducibility_Working_Group)

Mailing list hosted by JiscMail

JISCMAIL

Email discussion lists for the UK Education and Research communities



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For help and support help@jisc.ac.uk

<https://www.jiscmail.ac.uk/cgi-bin/webadmin?SUBED1=SESANS-WORKING-GROUP&A=1>

Data repository hosted on Zenodo

The screenshot shows the Zenodo website interface. At the top, there is a dark blue navigation bar with the Zenodo logo on the left, a search bar in the center, and 'Upload' and 'Communities' links on the right. Further right are 'Log in' and 'Sign up' buttons. Below the navigation bar, the page title 'canSAS SESANS Reproducibility Working Group' is displayed in a light grey bar.

Recent uploads

 New upload

canSAS SESANS Reproducibility Working Group

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The mission of this group is to achieve SESANS measurements that provide data on an absolute scale independent from the used instrument. They do this by discussing the development of standard calibration samples and considering issues of reproducibility between different instruments, ensuring that data are trustworthy, reliable, and comparable.

This community provides a place for working group members to share data of standard samples to discuss for reproducibility purposes.

Curated by:
gns6w3

Curation policy:
Data will be reviewed before acceptance to ensure they conform with current file standards.

https://zenodo.org/communities/sesans_reproducibility_working_group/

SESANS Reproducibility Working Group

Future activities

- Continue discussion of how best to ensure SESANS measurements are reproducible and reliable
 - Impact of samples and instrumentation on data (sample transmission, detector saturation, wavelength, monochromatic vs ToF...)
 - File format for data (currently *.ses)
 - Support software for modelling SESANS data
- Identify standard samples for calibration of SESANS instruments (that work at different wavelengths and at different spin-echo lengths) and perform benchmark measurements on existing SESANS instruments
- Encourage new SESANS users and expand application of the technique

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