

Figure 1: An (anonymised) overview in Moodle of the course-participants in the University of Copenhagen course on neutron scattering. The list shows e.g. access rights and last course access.

Showing graded and ungraded attempts for each user. The one attempt for each user that is graded is highlighted. The grading method for this quiz is **Highest grade**. [Reset table preferences](#)

First name A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

Surname A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

Download table data as

<input type="checkbox"/>	First name / Surname	Email address	State	Started on	Completed	Time taken	Grade/10.00	Q. 1 /2.50	Q. 2 /2.50	Q. 3 /2.50	Q. 4 /2.50
<input type="checkbox"/>	Aysha Review attempt		In progress	17 April 2020 2:07 PM	-	-	-	1.67	2.50	-	1.25
<input type="checkbox"/>	Villads Review attempt		In progress	17 April 2020 3:45 PM	-	-	-	0.00	2.50	2.50	2.08
<input type="checkbox"/>	Irene Review attempt		Finished	17 April 2020 5:24 PM	23 April 2020 11:36 PM	6 days 6 hours	5.17	0.58	2.50	0.00	2.08
<input type="checkbox"/>	Mathilde Review attempt		In progress	18 April 2020 3:30 PM	-	-	-	0.58	2.50	2.50	2.50
<input type="checkbox"/>	Nicolas Review attempt		Finished	19 April 2020 12:33 PM	19 April 2020 12:55 PM	22 mins 45 secs	6.67	1.67	2.50	0.00	2.50
<input type="checkbox"/>	Jakob Review attempt		Finished	19 April 2020 3:19 PM	19 April 2020 3:54 PM	35 mins 22 secs	7.08	0.00	2.50	2.50	2.08
<input type="checkbox"/>	Emma Review attempt		Finished	19 April 2020 3:55 PM	19 April 2020 5:10 PM	1 hour 15 mins	8.75	1.67	2.50	2.50	2.08
<input type="checkbox"/>	Kris Review attempt		Finished	19 April 2020 5:13 PM	19 April 2020 6:13 PM	1 hour	7.67	0.58	2.50	2.50	2.08
<input type="checkbox"/>	Kristine Review attempt		In progress	19 April 2020 9:14 PM	-	-	-	1.67	2.50	-	2.50
<input type="checkbox"/>	Baiyu Review attempt		Finished	20 April 2020 7:47 AM	21 April 2020 8:47 AM	1 day 1 hour	7.50	1.67	2.50	2.50	0.83
<input type="checkbox"/>	Jonas Review attempt		Finished	20 April 2020 9:22 AM	20 April 2020 10:04 AM	41 mins 46 secs	8.33	1.67	2.50	2.50	1.67
<input type="checkbox"/>	Rebeka Review attempt		In progress	20 April 2020 11:37 AM	-	-	-	-	-	-	-
Overall average							7.31 (7)	1.07 (11)	2.50 (11)	1.94 (9)	1.97 (11)

Figure 2: A look at (anonymised) data on progress in the course quizzes. Moodle allows many different levels of reporting, grading etc.

SANSSimple

Completed 15:48:49, 09/03-2020

Reconfigure

Simulation

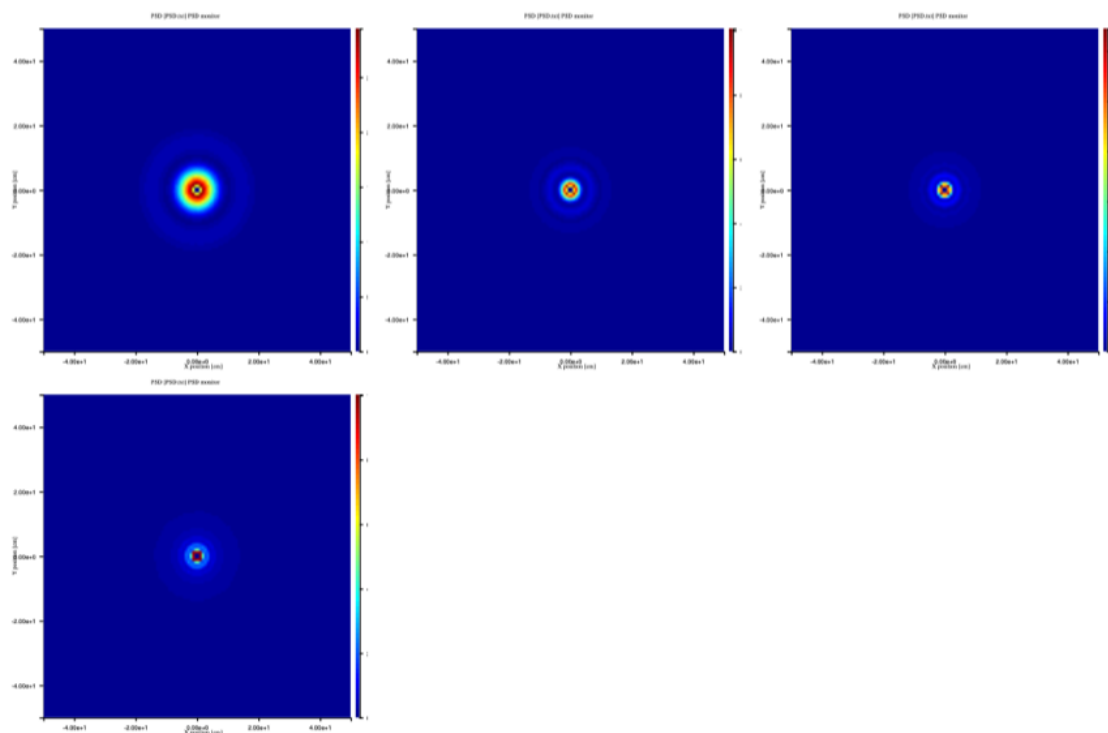
params: pinhole_rad=0.004 LC=3 LD=3 Lambda=6 DLambda=0.6 R=100,400 dR=0 dbilayer=35 PHI=0.01 Delta_Rho=0.6 Qmax=0.3 BEAMSTOP=1 SAMPLE=1 Sigma_a=0

neutron rays: 1000000

random seed: 0

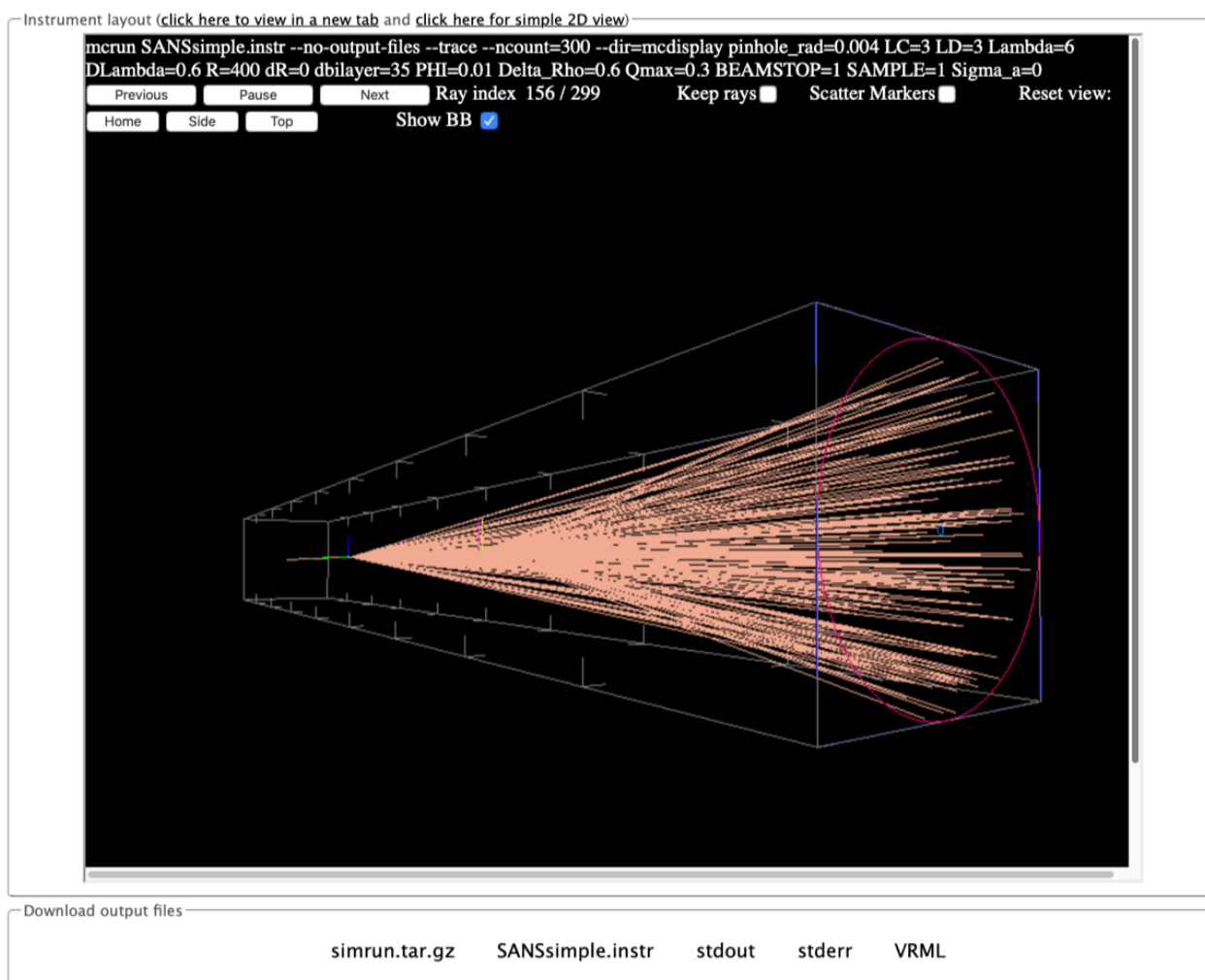
simulation steps: 4

Data plots for PSD ([click here for log-scale](#))



[Download PSD ZIP archive](#)

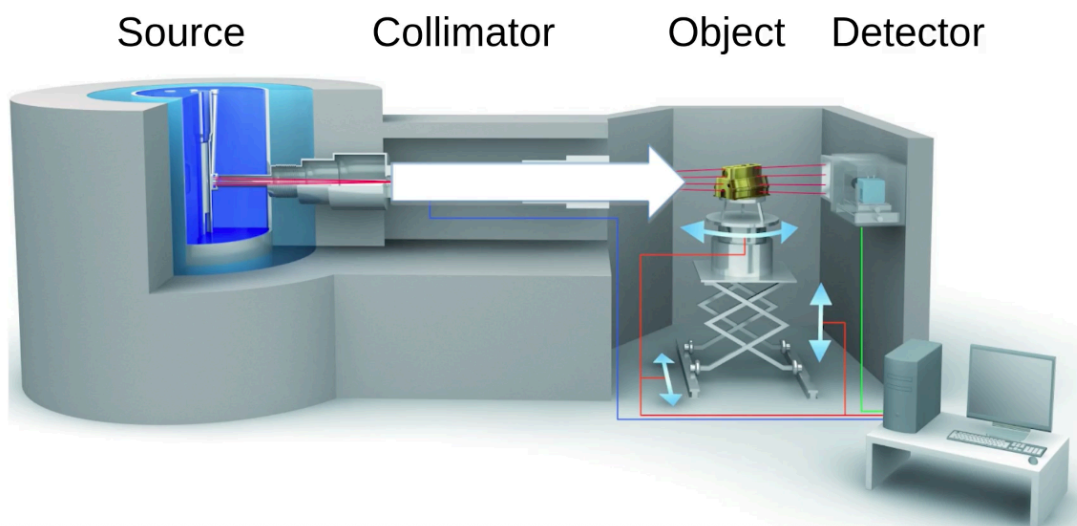
Figure 3: A visualisation of small-angle neutron scattering (SANS) data from the McStas web simulator. The SANS technique is a Fourier-like technique to measure long-range order in materials, and in the figures above, samples including hard spheres in thin solution of characteristic size 100, 200, 300 and 400 Å have been simulated.



A web-based interface for [McStas](#) and [McXtrace](#).

Figure 4: A 3D visualisation of a SANS instrument from the McStas web simulator. The neutron source is located in the left part of the figure, two slits are used to collimate the neutron beam (i.e. make it very parallel) after which the neutrons are scattered from the sample according to the sample properties. Finally, a detector collects the scattered intensity.

Conventional Imaging



3

ODIN overview

ODIN

ODIN is a multi-purpose imaging instrument designed to provide spatial resolutions down to the micrometre, offering a variety of imaging techniques across fields as diverse as engineering materials and components, palaeontology, conservation, geoscience and more.

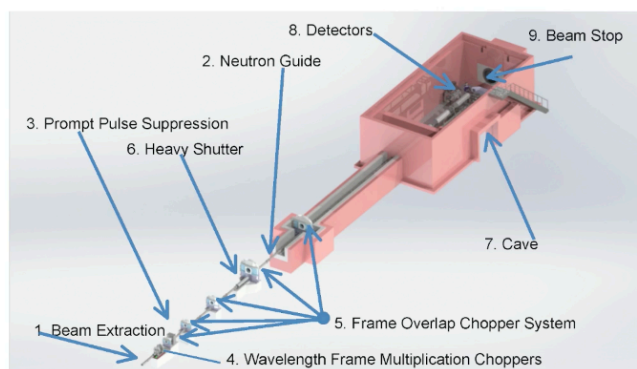
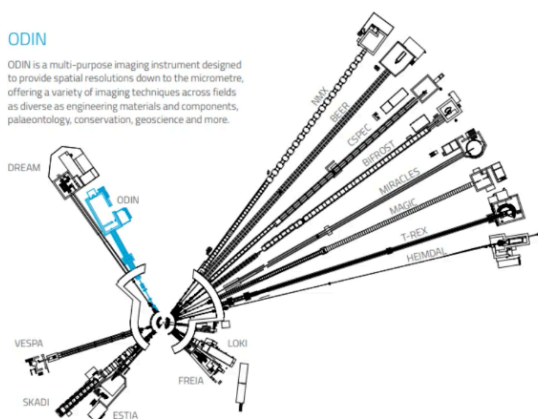
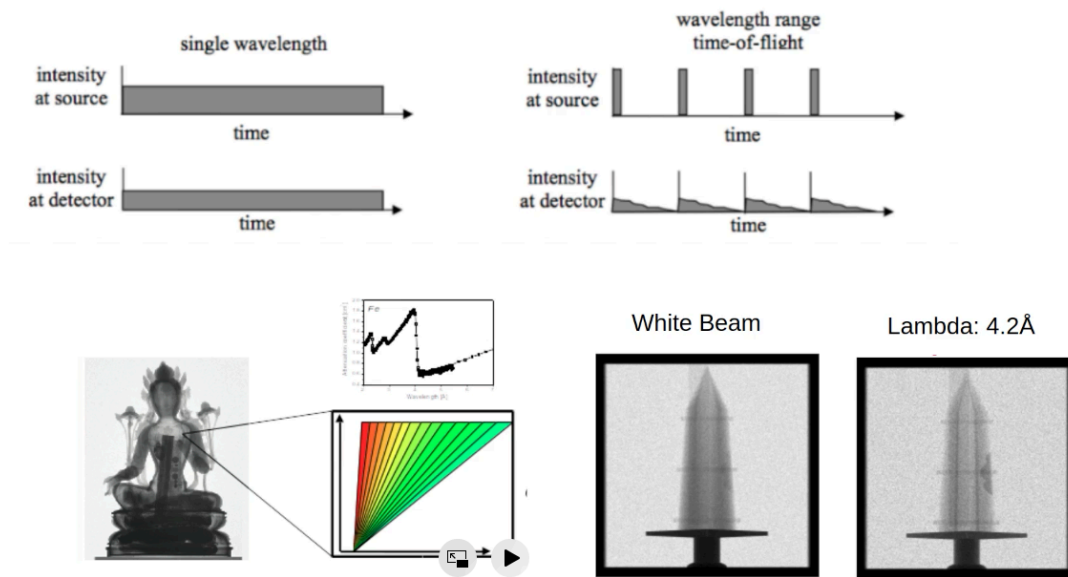


Figure 5: Screenshots from introductory video on the ODIN instrument at ESS, in preparation for a virtual experiment in the scientific area of cultural heritage. Part of the ESS-oriented courses of “Advanced topics in neutron scattering” and “Tartu / Swedness”.

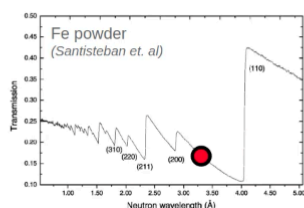
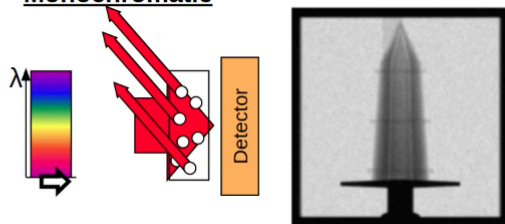
Neutron Imaging at pulsed Source



Diffraction Contrast

- Coh. elastic scattering $\sigma_T(\lambda) = \sigma_{el.coh.}(\lambda) + \sigma_{el.inc.}(\lambda) + \sigma_{inel.coh.}(\lambda) + \sigma_{inel.incoh.}(\lambda) + \sigma_{abs.}(\lambda)$
- hkl spacing probed in beam direction ("averaged" through thickness)

Monochromatic



$$2d_{hkl} \sin \theta = \lambda$$

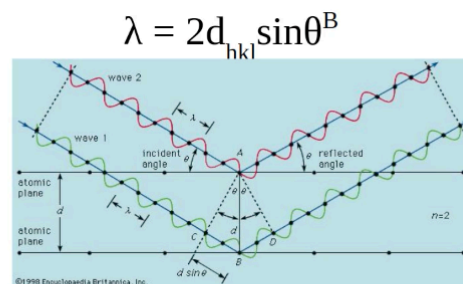


Figure 6: Screenshots from introductory video on the ODIN instrument at ESS, in preparation for a virtual experiment in the scientific area of cultural heritage. Part of the ESS-oriented courses "Advanced topics in neutron scattering" and "Tartu / Swedness".

Sword_ODIN

Completed 14:40:36, 15/05-2020

Reconfigure

Simulation

params: chopper_mode=5 Lambda=0 Sample=1 pinhole_diameter=0.01 pinhole_detector_distance=25 pinhole_sample_distance=24.95 X_sample_pos=0 Y_sample_pos=0 angle=0 Zoom=1

neutron rays: 10000000

random seed: 0

simulation steps: 1

Data plots ([click here for log-scale](#))

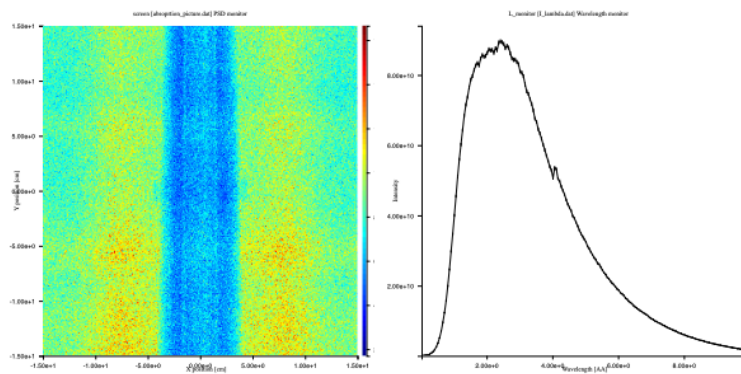


Figure 7: Simulated imaging data from the ESS ODIN imaging instrument, used in the ESS-oriented courses of “Advanced topics in neutron scattering” and “Tartu / Swedness”. The students investigate a topic from cultural heritage, in the form of a virtual experiment on rust-formation on a viking Sword.

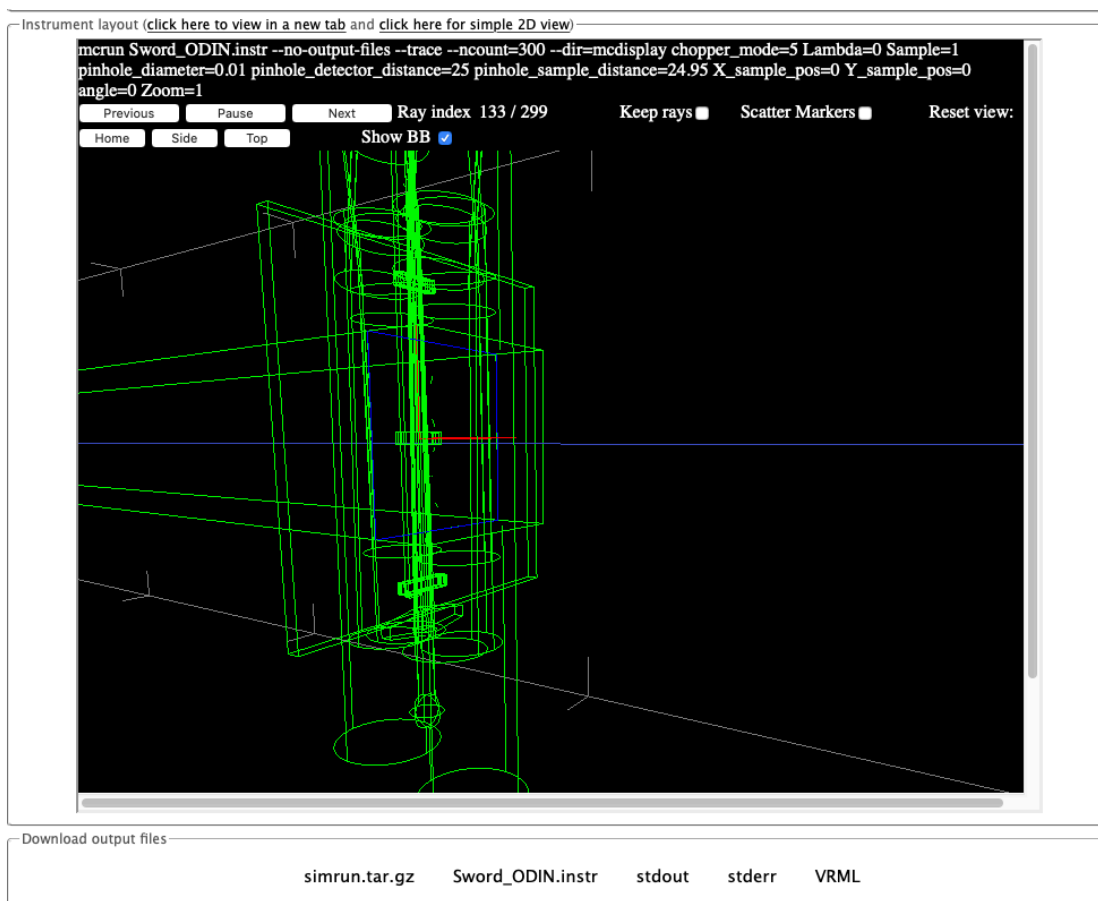


Figure 8: 3D-visualisation from the virtual imaging experiment: The Viking sword mounted in the sample environment at the ODIN instrument.