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SWISS NEUTRON NEWS

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Société Suisse pour la Diffusion des Neutrons
Swiss Neutron Scattering Society

EDITORIAL:

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ON THE COVER:

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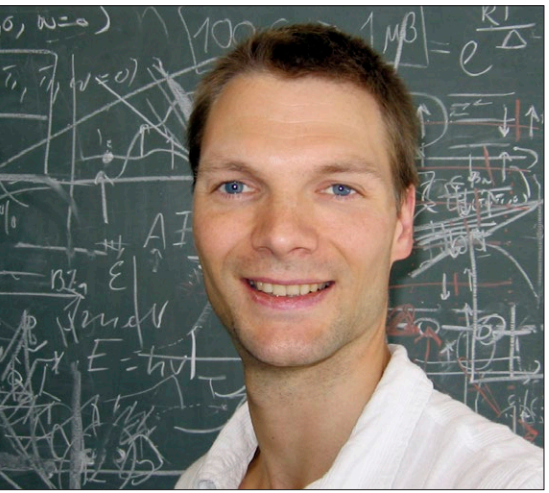

DEAR MEMBERS

Welcome to this issue of Neutron News, which brings an article about the new thermal neutron 3-axis spectrometer EIGER at our national neutron source SINQ. The successful completion of this spectrometer is a threefold joy to me. Firstly because I earlier provided small contributions to its design, but more importantly because my group and I look forward to benefitting from it as users, and most importantly because it greatly improves the Swiss neutron spectrometry capabilities. Indeed that is why we named it EIGER = Enhanced Intensity and Greater Energy Range.

Even if we are currently all excited by the amazing prospects for new experiments that the future ESS project will bring, it is an extremely important prerequisite for the effective exploitation of the ESS and for a productive neutron scattering community that we continue to improve the SINQ source and to upgrade its instrumentation. It is equally important that we maintain access to complementary sources at least until complete commissioning of the ESS including its full instrument suite.

Concerning the ESS instrument suite, the Swiss in-kind contributions (several in collaboration with Danish and German partners) are progressing very well. This was confirmed at the recent IKON4 workshop in Lund, where both the novel reflectometry concept Selene and the indirect time-of-flight spectrometer CAMEA (Continuous Angle Multiple Energy Analysis) projects were selected for plenary presentations. Indeed, it was greatly inspiring to attend this workshop dedicated to the design of instrumentation for ESS. Many of the instruments and concepts being developed predict gains in capabilities, which makes us dream about new types of experiments and new fields of science.

Indeed, with source and instrumentation developments and with many thriving scientific fields, neutron scattering currently stands before a bright future. In Switzerland we can celebrate a healthy neutron scattering landscape with a high quality national source, committed participation in existing and future European sources, and most importantly excellent coherence among users, providers and decision makers. I sincerely wish that our colleagues in countries, where the landscape may be more complex, have the vision to think ahead and focus on future science and the next generations of scientists, and the courage to prioritise this united vision over potential local interests. In 2013 the ESS project needs united support from the European neutron scattering community. Once this is safely secured, optimal local solutions can be developed. As scatterers we must all embrace the power of coherence!

Sincerely yours
Henrik M. Ronnow

Commissioning Results of the Thermal Triple-Axis-Spectrometer EIGER at SINQ

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Laboratory for Neutron Scattering, Paul Scherrer Institut, 5232 Villigen PSI, Switzerland

ABSTRACT

In 2012 the new thermal triple-axis spectrometer EIGER was completed and went into operation. EIGER extends the available energy range for neutron spectroscopy at SINQ. The main components of the primary spectrometer of EIGER are an adjustable virtual source, a double focusing monochromator and a non-magnetic shielding. The performance of the instrument will be demonstrated with a few examples of first experiments.

INTRODUCTION

Up to now there were four spectrometers for cold neutrons at the Swiss neutron source SINQ, but none for thermal neutrons. The cold spectrometers are two triple-axis spectrometers (RITA2 and TASP), one direct time-of flight spectrometer (FOCUS) and one inverse time-of flight backscattering instrument (MARS). Cold spectrometers are best suited to study excitations up to energies of about 5 meV. However, there is also a strong demand for experiments which require larger energy transfers. These experiments could either not be performed at SINQ (above 10 meV) or they were done on cold spectrometers although a thermal instrument would perform better. Therefore, it was decided to build a thermal triple-axis-spectrometer at the thermal beam port 80 of SINQ in order to fill this gap. The new triple-axis-spectrometer should extend the available energy range up to about 50 meV.

DESCRIPTION

The most important quantities for a triple-axis-instrument are intensity and (low) background. Since the new instrument, called EIGER, is the first thermal triple-axis instrument at a continuous spallation source it was a special challenge to design a proper shielding for the monochromator in order to keep the fast neutron and Gamma-ray background sufficiently low. Additionally, it should be possible to perform experiments with cryomagnets, therefore, the shielding had to be built from non-magnetic materials. The final design is a composition of different materials: boron for the absorption of thermal neutrons, tungsten for the absorption of fast neutrons and the attenuation of Gamma-rays and additional special heavy (non-magnetic) concrete to absorb Gamma radiation. The total wall thickness of the monochromator housing is 780 mm.

Figure 1: Picture of the thermal triple-axis-spectrometer EIGER.

The principle neutron layout for the primary spectrometer consists of a sapphire filter which reduces the contribution of fast neutrons at energies above about 80 meV, an adjustable virtual source with a maximum width of 40 mm and a double focusing monochromator. The beam exit of the primary spectrometer can be rotated, so that any scattering angle at the monochromator between 17 and 90 degrees is accessible. Com-

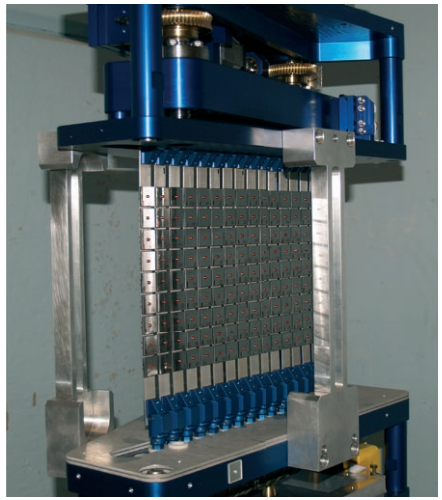

Figure 2: Picture of the double focusing PG monochromator of EIGER.

ponents of the former cold triple-axis spectrometer Drüchal are used for the secondary spectrometer. A picture of the instrument is given in Figure 1.

The double focusing PG-monochromator consists of 15 × 9 pieces of pyrolytic graphite with a mosaicity of about 30′ and a size of 20 × 20 mm² each (Fig. 2). The graphite is fixed on Al-lamellas, which can be rotated for horizontal focusing of the beam and bent for vertical focusing. A picture of the focal spot at sample position, taken with a neutron camera is shown in Figure 3. The monochromator is mounted on a rotation table and a translation table. For each angle the horizontal and the vertical focusing is adapted to its optimal value and the translation table is used to compensate for the shift of the PG-crystals caused by the bending of the Al-lamellas.

PERFORMANCE

Figure 4 shows the incoherent elastic line of Vanadium taken with double focused monochromator and horizontally focusing analyzer and a fixed final wavevector of 2.66 Å^{-1}. The diameter of the used Vanadium rod is 10 mm. The resolution of about 0.64 meV is approximately what can be expected from Monte-Carlo simulations of the instrument.

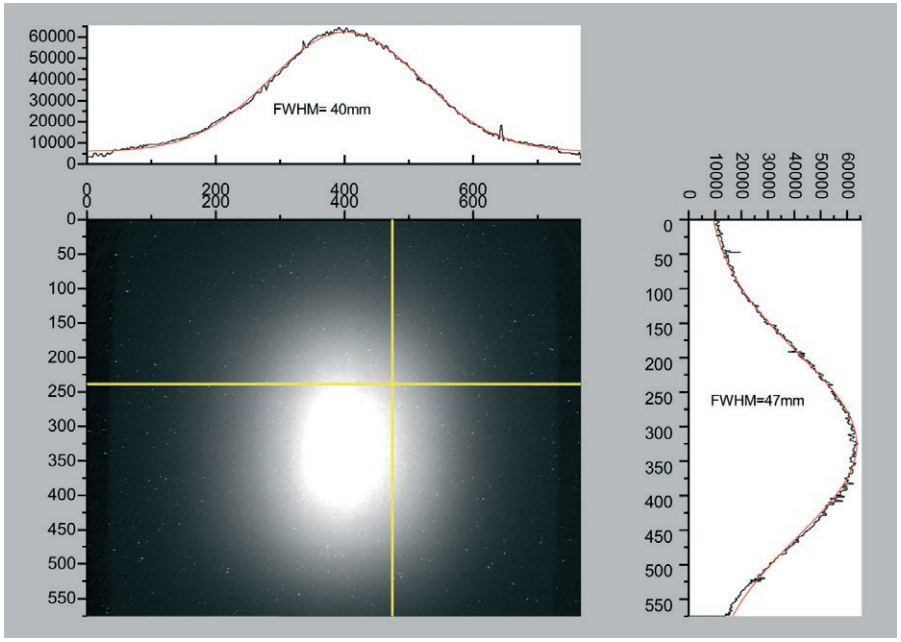

Figure 3: Focus of the neutron beam with a neutron energy of 14.7meV at the sample position taken with a neutron camera. The yellow lines indicate where the intensity plots on top and on the right are taken.

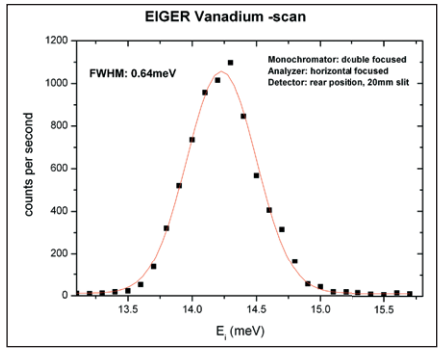

Figure 4: Measured energy resolution on EIGER with a fixed final energy of 14.5 meV.

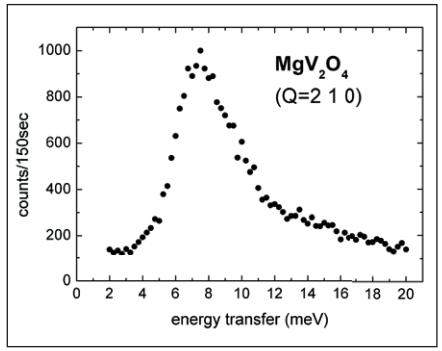

Figure 5: Magnetic excitations in MgV_2O_4 at a momentum transfer of a magnetic reflection, showing the gap of about 6 meV and the continuous excitation spectrum above.

The total flux at the sample position was estimated with a calibrated monitor at sample position. The flux with double focusing monochromator is about $5.8 \cdot 10^6$ n · cm^{-2} · sec^{-1} at a incident wavevector of $k_i = 2.66$ Å^{-1} and $1.4 \cdot 10^7$ n · cm^{-2} · sec^{-1} for $k_i = 4.3$ Å^{-1}. The instrumental background depends on the used cryostat. With a large diameter cryostat or vacuum box (to reduce air scattering) without collimators and with double focusing monochromator and horizontal focusing analyzer the background is about 2–4 counts per minute.

EXAMPLES OF FIRST EXPERIMENTS

MgV_2O_4

MgV_2O_4 is a frustrated transition metal spinel that contains an additional orbital degree of freedom. The frustration is caused by a network of corner-sharing tetrahedral of V^{3+} ions. The degeneracy is partially lifted by a structural distortion from cubic to tetragonal at 65 K and magnetic ordering is achieved at T_N = 42 K. Figure 5 shows the magnetic excitations at T = 2 K at Q = (2 1 0), the position of a magnetic Bragg reflection. The excitation spectrum shows a gap of about 6 meV and a high energy tail above the peak.

$RbCoCl_3$

$RbCoCl_3$ is a quasi-1dimensional Ising antiferromagnet with an ordering temperature of the spins along the chains at about T_{N1} = 28 K. Three dimensional ordering occurs below a second transition temperature of T_{N2} = 11 K.

Figure 6 shows the magnetic excitation at Q = (2/3 2/3 1), the position of a magnetic Bragg reflection. The spectrum in Figure 6a was measured at T = 1.5 K with fixed final energy E_f = 14.7 meV and the PG-(002) reflec-

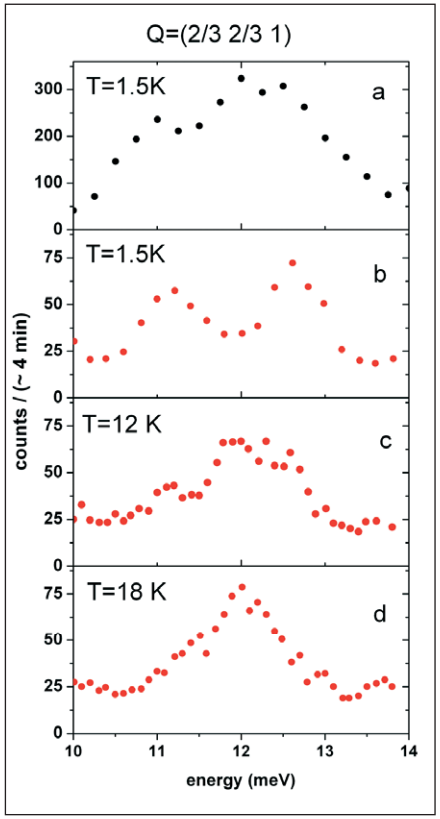

Figure 6: The magnetic excitation of $RbCoCl_3$ at Q = (2/3 2/3 1). The spectrum in panel (a) was measured at T = 1.5K with fixed final energy E_f = 14.7 meV and the PG (002)- reflection at the monochromator. In order to increase the instrumental resolution, the set-up of the instrument was changed to a fixed E_f = 11.75 meV and PG-(004) reflection at the monochromator. The same excitation spectrum as in panel (a) but with the new set-up is plotted in panel (b). Panels (c) and (d) show the same spectrum measured with the high resolution set-up at higher temperatures.

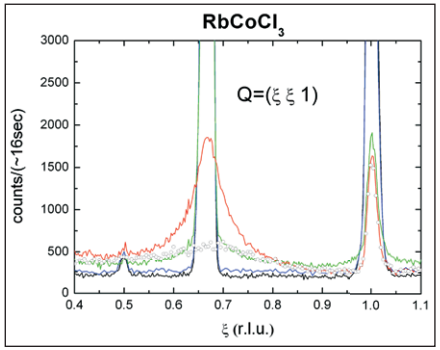

Figure 7: Elastic scattering of magnetic diffuse scattering and magnetic Bragg-peaks measured at different temperatures. The black line corresponds to a sample temperature of 1.5 K, the blue one to 10 K, the green one to 16 K, the red one to 28 K and the open dots to 35 K.

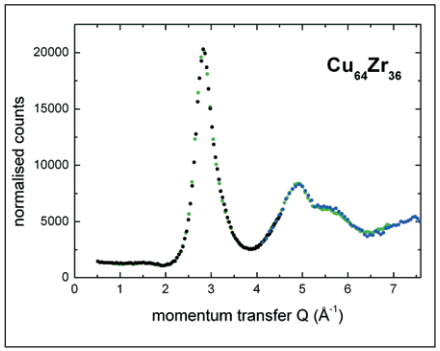

Figure 8: Elastic scattering of $Cu_{64}Zr_{36}$-glass measured with 3 different incident neutron energies: 14.7 meV (black circles), 34 meV (green circles) and 46 meV (blue circles). The intensity of the three curves has been scaled to the same value.

tion at the monochromator. A weak indication for a splitting of the excitation can be observed. In order to increase the instrumental resolution we changed the set-up of the instrument to a fixed E_f = 11.75 meV and PG-(004) reflection at the monochromator. The measured spectrum is plotted in Figure 6b. In this spectrum the two excitations are well separated. This shows that the instrumental resolution can be drastically improved by using the PG-(004) reflection instead of the PG-(002) reflection without loosing too much intensity. In Figures 6c and 6d the same spectrum is shown at higher temperatures, where the gap between the two peaks becomes smaller and vanishes above 18 K.

Figure 7 shows the variation of the intensity of the magnetic Bragg-reflection and the magnetic diffuse scattering at different temperatures.

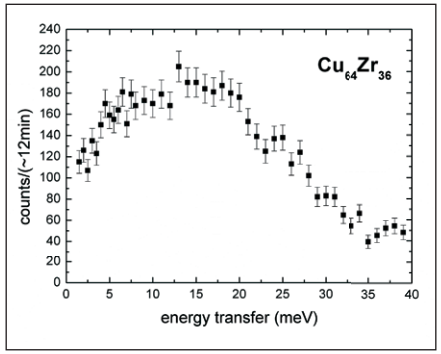

Figure 9: Measured phonon spectra of bulk $Cu_{64}Zr_{36}$ metallic glass at a momentum transfer of 4 Å^{-1}.

Metallic Glass $Cu_{64}Zr_{36}$

The bulk metallic glass $Cu_{64}Zr_{36}$ was investigated with different instrument configurations. The experiment was performed with a vacuum chamber and a closed cycle cryostat. The total amount of sample in the beam was approximately 3 g. The structure factor measured in the triple axis configuration (E_f = E_i) with incident neutron energies E_i of 14.7 meV, 34 meV and 46 meV is shown in Figure 8. The inelastic spectrum measured at a momentum transfer Q = 4.0 Å^{-1} and a final neutron energy E_f of 14.7 meV is given in Figure 9. It shows weakly structured phonon distribution up to energies of about 35 meV.

CONCLUSION

The commissioning phase is now finished and the instrument is ready for full user operation next year.

ACKNOWLEDGEMENT

The instrument was designed and partly built up by Prof. H. Ronnow, Dr. S. Gvasaliya and Dr. U. Filges.

The technicians D. Graf, R. Bürge, C. Kägi, T. Mühlebach, D. Hohl and others constructed and built the instrument and solved our problems.

We thank Dr. Ch. Stock, Prof. C. Rüegg and Prof. Schönfeld for the permission to show data of their experiments prior to publication.

ILL Colloquium in honour of Alan Hewat: 'A Life of Refinement – 50 years of Neutron Scattering', October 26, 2012

Peter Fischer
Laboratory for Neutron Scattering, Paul Scherrer Institut, 5232 Villigen PSI, Switzerland

In many fields of neutron scattering Alan Hewat had been a pioneer. In particular he developed the powerful multidetector/mylar foil Soller collimator instruments D1A [1] and D2B [2] for high-resolution neutron diffraction at the high neutron flux reactor of Institut Laue-Langevin (ILL) in Grenoble.

D1A, situated at a thermal neutron guide coated with natural Ni, had initially 10 10' collimators. It became the prototype for most constant-wavelength high-resolution neutron powder diffractometers in the world. With a vertically focusing Ge (hkk) monochromator the monochromator take-off angle had been 122 degrees.

Swiss users had officially access to D1A and D2B when Switzerland joined ILL in 1988. The latter instrument is situated at a thermal neutron beam in the reactor hall of ILL. Due to monochromator scattering angle $2\theta_M$ of 135 degrees and 5' collimators, the maximum resolution $\delta d/d$ of approximately 5×10^{-4} with d as lattice spacing, has been achieved.

As one of the most cited ILL publications [3], the true average chemical structures of the compounds $YBa_2Cu_3O_{7-x}$ with the 90 K superconductor for x = 6.95 originated both from D1A and D2B measurements. Moreover correlation of the superconducting transition temperatures T_c and the bondvalence sum around the plane copper, indicating charge transfer and Cu-O chains as charge reservoir, had been proved. Thus together with similar results obtained independently by Jorgensen et al. [4] neutron diffraction clearly corrected the 'alternate structure' model of Reller et al. [5], which was mainly based on x-ray investigations.

During the years 1994 to 1998, when neutron instruments were moved from the 10 MW reactor Saphir to the continuous spallation source SINQ and also new instruments were installed there, 'SuperD1A' with 25 detectors served with F. Fauth as local contact very well as CRG instrument for Swiss users. Unfortunately D1A had finally to be removed in 2011 because the place was needed for a new cold neutron guide for the millenium project IN16b.

In 2003 Alan Hewat and his team transferred D2B into SuperD2B, mainly by doubling the number of the 64 D2B 5' collimators and detectors and by increasing the now position-sensitive detectors from 10 cm to 30 cm height. Thus a factor of 6 in intensity had been gained. And this two-dimensional detector shows directly sections of Debye-Scherrer cones with possible texture.

SuperD2B should be compared to the presently best time-of-flight neutron diffractometers such as HRPD at ISIS and SuperHRPD at J-PARC in Japan with maximum resolutions $\delta d/d \approx 4 \times 10^{-4}$ and 3×10^{-4}, respectively. Such or even smaller values approaching those of synchrotrons will be necessary for a new high-resolution neutron powder diffractometer at ESS to enable the determination of the increasingly complex structures of new materials.

After his retirement in 2007 Alan Hewat concentrated with his neutron optics company (http://www.neutronoptics.com, look there also at Alan's personal account of the history of the ILL) on CCD scintillator cameras for both neutrons and x-rays as well as for astronomical applications. In cooperation with ILL new types of neutron Laue instruments such as CYCLOPS resulted.

More details (including conference photos) on the manifold instrumental and scientific contributions of Alan Hewat to neutron scattering and in particular for ILL and Switzerland are summarized in the presentations which are available from the ILL homepage at: http://www.ill.eu/news-events/events/alan-hewat-colloquium/programme/.

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Announcements

SGN/SSDN MEMBERS

Presently the SGN has 195 members. Online registration for new members of our society is available from the SGN website: http://sgn.web.psi.ch

SGN/SSDN ANNUAL MEMBER FEE

The SGN/SSDN members are kindly asked to pay their annual member fees. The fee is **CHF 10.–** and can be paid either by bank transfer or in cash during your next visit at PSI. The bank account of the society is accessible for both Swiss national and international bank transfers. The coordinates are as follows: Postfinance: 50-70723-6 (BIC: POFICHBE), IBAN: CH39 0900 0000 5007 0723 6

PSI FACILITY NEWS

TPSI launched a **quarterly electronic newsletter** featuring recent news, events and scientific highlights of the three major PSI user facilities SLS, SINQ and SμS. The online version of the recent edition is available here: http://www.psi.ch/info/facility-news

SINQ CALL FOR PROPOSALS

The next **deadline** for the submission of beam time requests for the Swiss spallation neutron source 'SINQ' (http://sinq.web.psi.ch) will be: **May 15, 2013**

PSI SUMMER SCHOOL ON CONDENSED MATTER RESEARCH 2013

The 12th PSI Summer School on Condensed Matter Research will take place August 17–23, 2013, at the Lyceum Alpinum in Zuoz, Switzerland. This year, the school is dedicated to Materials structure and magnetism. International experts and PSI staff members will introduce and deepen your knowledge not only about these scientific topics but also about the main methods applied to understand the phenomena, which are presently at the forefront of modern solid state physics and chemistry. Following the school, a practical training is offered at PSI. It will allow a limited number of participants to get hands-on experience with state-of-the-art instrumentation using photons, neutrons, and muons.

JOINT USERS' MEETING AT PSI: JUM@P 2013

The Joint Users' Meeting @ PSI (JUM@P) of the three user communities of SLS, SINQ, and SμS will take place September 18–20, 2013, at PSI. The JUM@P meeting takes place every other year and its goal is to generate new synergies among the scientists driven by common scientific rather than technical interests.

NEUTRON BEAM TIME AT SNS FOR THE SWISS NEUTRON COMMUNITY

An actively shielded 16 Tesla magnet has been realized at the Spallation Neutron Source SNS in Oak Ridge, USA, as a collaboration of the Swiss neutron community and SNS. In return, beam time is available at SNS for Swiss users. Swiss neutron scatteres are therefore encouraged to apply for beamtime at SNS.

REGISTRATION OF PUBLICATIONS

Please remember to **register all publications either based on data taken at SINQ, SLS, SμS or having a PSI co-author** to the Digital User Office: https://duo.psi.ch. Please follow the link 'Publications' from your DUO main menu.

OPEN POSITIONS AT ILL

To check the open positions at ILL please have a look at the following ILL-Webpage: http://www.ill.eu/careers

PHD POSITIONS AT ILL

The PhD program of the Institut Laue-Langevin, ILL, is open to researchers in Switzerland. The contact person at ILL is Anne-Claire Dupuis (PhD@ill.eu). The Swiss agreement with the ILL includes that ILL funds and hosts one PhD student from Switzerland.

Minutes of the SGN/SSDN General Assembly 2012

Date/Locality: October 29, 2012, Paul Scherrer Institut, main auditorium
Begin: 17:00
End: 18:00
Participants: 8 members of the society

1. WELCOME

The president of the SGN/SSDN, Henrik Ronnow, welcomes the participants to the general assembly 2012.

2. MINUTES OF THE GENERAL ASSEMBLY 2011

The minutes of the general assembly of the SGN/SSDN from 4.11.2011, published in Swiss Neutron News #40 (August 2012) are accepted without objections.

3. ANNUAL REPORT OF THE CHAIRMAN

H. Ronnow reports on the activities of the SGN/SSDN in the year 2012:

a) This year, no aperitif was sponsored by the Society at the PSI Summer School on Zugerberg, August 11–19, 2012 (Imaging Life and Matter – using photons, neutrons and muons), as the aperitif was offered by Institut Montana.
b) One new issue of Swiss Neutron News has appeared in August 2012. (A December issue is in preparation).
c) The SGN/SSDN has presently 201 members.
d) Meetings in EMSA amd SER focused dominantly on ESS.

4. REPORT OF THE TREASURER

The annual balance sheet 2011 is presented:

Assets SGN/SSDN on 1.1.2011: **CHF 4045.49**

	Revenues [CHF]	**Expenses [CHF]**
Membership-fees (cash box)	140.–	
Membership-fees (postal check acc.)	240.00	
Donations (cash box)	0.–	
Interest	4.55	
Total expenses		737.50
– Apéro Zugerberg (2011)		700.00
– Expenses PC account		37.50
Total	384.55	737.50
Net earnings 2011:	**– 352.95**	
Assets SGN/SSDN on 31.12.2011:	**3692.54**	

Balance sheet 2011:

	Assets [CHF]	**Liabilities [CHF]**
Postal check account	3204.04	
Cash box	488.50	
Assets on 31.12.2011	**3692.54**	

5. REPORT OF THE AUDITORS

Bericht der Revisoren

Die Rechnungsrevisoren haben die Belege, die Abrechnungen und die Bilanz für das Jahr 2011 geprüft und für in Ordnung befunden!

9.1.12		23.01.12	
Datum	Dr. M. Zolliker, PSI	Datum	Dr. K. Krämer, Uni Bern

Both Auditors (K. Krämer and M. Zolliker) have examined the bookkeeping and the balance 2011. They have accepted it without objection. The participants therefore unanimously vote for a release of the SGN/SSDN board.

6. BUDGET 2013

The president presents the following proposal for the budget 2013:

	Receipts [CHF]	Expenditures [CHF]
Member fees	400.–	
Interest	0.–	
Fees PC account		40.–
Summer School aperitif 2013		600.–
Total	400.–	640.–
Balance 2013	**–240.–**	

The participants accept the budget proposals unanimously.

7. (RE-)ELECTION OF BOARD MEMBERS

The term of the SGN board, Prof. Henrik Ronnow (president), Prof. Anna Stradner, Dr. Michel Kenzelmann, and Dr. Urs Gasser (secretary), ends in 2012 and, therefore, the board has to be renewed. Henrik Ronnow, Michel Kenzelmann, and Urs Gasser are again candidates for the following term. Prof. Anna Stradner has moved from the University of Fribourg to the University of Lund, Sweden, and therefore steps back from the board of SGN.

Henrik Ronnow is reelected unanimously as president. Michel Kenzelmann is reelected unanimously as board member. Urs Gasser is elected unanimously as board member and secretary.

Nominations for an additional board member are welcome for the assembly in 2013.

8. NEWS FROM ENSA (H. RONNOW)

a) The last ENSA meeting took place in Dubna, Russia (October 8–9, 2012). The reactor of the Dubna neutron source has been refurbished in 2011 and the institute aims to improve user-friendliness and to become more open for users from western Europe.
b) As the ESS Preparatory Phase has been completed, ENSA aims to contribute to define the science vision for ESS. A science statement regarding ESS is being prepared by ENSA.
c) ENSA wrote a supporting letter, which helped the research reactor at the Institute for Atomic and Subatomic Physics in Vienna to secure future access to new fuel elements.
d) The next International Conference on Neutron Scattering (ICNS) will be organized in Edinburgh, July 8–12, 2013. The next European Conference on Neutron Scattering (ECNS) will take place in Zaragossa.

9. NEWS FROM ILL (K. N. CLAUSEN)

Kurt N. Clausen as the Swiss representative in the ILL Scientific Committee (SC) reports on the 86th Scientific Council meeting held on April 26–27, 2012:

a) After the Fukushima stress test, safety upgrades of the ILL reactor are needed. The total cost is estimated as 12 M€ over 3 to 4 years. The ILL associates have agreed to pay this amount as extra money.
b) The Swiss membership of ILL is secured for 2014–2018. The total cost for this time frame is 18.2 MCHF.
c) In 2011, ILL was operated with four reactor cycles, and 98% of this time could be delivered. The 3.5 cycles planned for 2012 have been reduced to 3 cycles, as one control rod of the reactor needs to be replaced.
d) For 2013 and 2014, 3 + 3 reactor cycles are planned with a shutdown of 10 months. Four reactor cycles are again planned for 2015.
e) The Swiss beam time at ILL has been reduced for several years due to national quotas. In 2012, this reduction of beam time was less severe than in 2011.
f) The ILL is working on finalizing new contracts with all associates and scientific partners. The contracts of most collaborating research groups are secured for the next few years. The budget for 2013 is laid down at the council meeting taking place in November 2012.
g) The Swiss representatives in two committees have changed: Christoph Niedermayer (PSI) is the new representative in college 4 (magnetic excitations), and Bernhard Lauss (PSI) represents Switzerland in college 3 (nuclear and particle physics). Michel Kenzelmann (PSI) and Marco Lattuada (UniFR) keep their positions in colleges 5B (magnetism) and 9 (soft matter),

respectively. Kurt N. Clausen remains as the Swiss representative in the scientific council until end of 2013.

10. NEWS FROM SINQ

The construction of the thermal three-axis spectorometer EIGER was completed in November 2011. First experiments have been done and the spectrometer works as expected. It is now open for all users and nine proposals for EIGER have been submitted on the proposal deadline of November 15.

11. NEWS FROM ESS

H. Ronnow reports on developments at ESS.

a) The Momorandum of Understanding (MoU) that Switzerland signed on September 21, 2011, was extended by one year, and the ESS continues to be part of the Swiss roadmap for 2013–16. Legal committments for the construction of ESS are expected for May or June 2013, when the member countries will give their Letters of Intent (LoI's) for the construction of ESS. The start of the construction phase is planned for early 2013.
b) Work on the accelerator design is on track. The target design, in which Switzerland is involved, requires more studies.
c) For instrument design, Switzerland continues to be involved in collaboration with Denmark. For this in-kind contribution to ESS, three positions have been filled at PSI. The Swiss-Danish work packages include an extreme environment spectrometer, a reflectometer, a compact chopped SANS (BioSANS), a hybrid instrument, and neutron optics.
d) The framework for instrument construction has not yet been defined. Whether the groups designing instruments for ESS will also be in charge for building and/or operating the instrument has not been decided. Germany favors the model that instruments are designed, built, and operated by one group. However, Switzerland would probably need a partner to build an instrument at ESS and, therefore, favors the model that the design and construction of an instrument can be carried out by different groups.
e) Kurt N. Clausen points out that it will be important to keep Swiss industry informed about bid invitations of ESS. The PSI plans to be in contact with Swiss companies to keep them informed and prepare them for tenders. PSI is already in contact with Ampegon (RF systems, Turgi), Swiss Neutronics (neutron guides and optics, Klingnau), and Tokyo Electron (precision mechanics, Trübbach).

12. MISCELLANEOUS

H. Ronnow points out that the ILL PhD program is open to researchers in Switzerland. The next deadline for submitting PhD proposals is December 3, and the contact person at ILL is Anne-Claire Dupuis (PhD@ill.eu).

U. Gasser, November 2012

Conferences and Workshops 2013–2014

(an updated list with online links can be found here: http://www.psi.ch/useroffice/conference-calendar)

APRIL 2013

- 2013 MRS Spring Meeting and Exhibit April 1–5, 2013, San Francisco, CA, USA
- Probing Macromolecules at Water-Solid Interfaces – School on Surface Analytical Techniques April 2–5, 2013, Geneva, Switzerland
- European Spallation Source Science Workshop on New Generation Green Construction Materials April 3–4, 2013, Stockholm, Sweden
- Advances in X-ray Free-Electron Laser Instrumentation April 15–18, 2013, Prague, Czech Republic
- EMBO Practical Course: Computational Structural Biology – from data to structure to function April 15–19, 2013, Hamburg, Germany
- Nanostructures probed by intense particle beams April 15–19, 2013, Leuven, Belgium
- Frontiers in Neutron Structural Biology April 16–18, 2013, Oak Ridge, TN, USA
- School: Water at Interfaces: New Developments in Physics, Chemistry and Biology April 25–26, 2013, Les Houches, France

MAY 2013

- ReX&GG2013: 5th International Conference on Recrystallization and Grain Growth May 5–10, 2013, Sydney, Australia
- EMBO Practical Course on Small Angle Neutron and X-ray Scattering from Proteins in Solution May 6–10, 2013, Grenoble, France
- Hybrid-Photovoltaics 2013 Symposium May 15–17, 2013, Berlin, Germany
- MaMaSELF status meeting 2013 May 21–24, 2013, Rigi Kulm, Switzerland
- 3rd EIROForum School on Instrumentation May 27–31, 2013, CERN, Geneva, Switzerland
- 7th Central European Training School on Neutron Scattering May 27–31, 2013, Budapest, Hungary
- 2nd Workshop on Dzyaloshinskii-Moriya Interaction and Exotic Spin Structures May 28 – June 1, 2013, Veliky Novgorod, Russia

JUNE 2013

- Gordon Research Conference on Electron Distribution and Chemical Bonding June 2–7, 2013, Les Diablerets, Switzerland
- 12th Canadian Neutron Scattering Summer School June 2–7, 2013, Chalk River, Canada

- Workshop on New Directions for High Pressure Neutron Research June 3–5, 2013, Oak Ridge, TN, USA
- Bachelor Summer Program: Introduction to large scale facilities: Probing matter with synchrotron and neutron radiation June 3 – July 13, 2013, Grenoble, France
- ICCS 2013: International Conference on Computational Science June 5–7, 2013, Barcelona, Spain
- The Zurich School of Crystallography 2013 June 9–22, 2013, Zurich, Switzerland
- Summer School on Methods and Applications of Neutron Spectroscopy and Small Angle Neutron Scattering June 17–21, 2013, Gaithersburg, USA
- 21emes Journees de la Diffusion Neutronique June 21–27, 2013, Sete, Languedoc-Roussillon
- iWoRID: 15th International Workshop on Radiation Imaging Detectors June 23–27, 2013, Paris, France
- Fourth Workshop on Neutron Scattering Applications in Structural Biology June 24–28, 2013, Oak Ridge, TN, USA
- 55th Electronic Materials Conference June 26–28, 2013, University of Notre Dame, IN, USA

JULY 2013

- NOP&D-2013: International Workshop on Neutron Optics and Detectors (ICNS satellite meeting) July 2–5, 2013, Munich, Germany
- 4th European PEFC and H2 Forum July 2–5, 2013, Luzern, Switzerland
- Gordon research conference on Electron Distribution and Chemical Bonding July 2–7, 2013, Les Diablerets, Switzerland
- ICNS 2013: International Conference on Neutron Scattering July 7–11, 2013, Edinburgh, UK
- 15th International Clay Conference with Symposium on Water mobility studies in reference and real clays July 7–11, 2013, Rio de Janeiro, Brazil
- ESOC 2013: 18th European Symposium on Organic Chemistry July 7–12, 2013, Marseille, France
- 17th International Zeolithe Conference July 7–12, 2013, Moscow, Russia
- ISCOM2013: 10th International Symposium on Crystalline Organic Metals Superconductors and Magnets July 14–19, 2013, Montreal, Canada
- ISWAMP-2: Second Workshop on Intense field – Short Wavelength Atomic and Molecular Processes July 20–22, 2013, Xi'an, China
- ACCGE-19: 19th American Conference on Crystal Growth and Epitaxy July 21–26, 2013, Keystone, Colorado, USA
- CORPES-13: International Workshop on Strong Correlations and Angle-Resolved Photoemission Spectroscopy July 29 – August 2, 2013, Hamburg, Germany

AUGUST 2013

- PRCIM8: 8th Pacific Rim International Conference on Advanced Materials and Processing August 4–9, 2013, Waikoloa, Hawaii

- 15th Annual National School on Neutron and X-ray Scattering August 10–24, 2013, Argonne and Oak Ridge, USA
- 12th PSI Summer School on Condensed Matter Physics August 17–25, 2013, Zuoz, Switzerland
- ECM 28: The 28th Meeting of the European Crystallographic Association August 25–29, 2013, Warwick, UK
- ICNS-10: 10th International Conference on Nitride Semiconductors August 25–30, 2013, Washington, D.C., USA
- Diffusion Fundamentals V August 26–29, 2013, Leipzig, Germany

SEPTEMBER 2013

- 17th Laboratory Course Neutron Scattering September 2–13, 2013, Jülich and Garching, Germany
- 13th Oxford School of Neutron Scattering September 2–13, 2013, Clarendon Laboratory, Oxford, UK
- 11th International Conference on Biological Synchrotron Radiation September 8–11, 2013, Hamburg, Germany
- XVII. International Conference on Recent Progress in Many-Body Theories September 8–13, 2013, Rostock, Germany
- PSI2013: Physics of Fundamental Symmetries and Interactions at low energies and the precision frontier September 9–12, 2013, PSI Villigen, Switzerland
- MISSCA 2013: Joint Annual Meeting of the Italian, Spanish and Swiss Crystallographic Associations September 9–12, 2013, Como, Italy
- International Soft Matter Conference 2013, September 15–19, 2013, Rome, Italy
- X-FEL2013: the X-ray Free Electron Laser School and symposium September 16–20, 2013, Dinard, France
- 3rd Joint User Meeting at PSI: JUM@P 2013 September 18–20, 2013, PSI Villigen, Switzerland
- Eco MaTech: European Conference on Materials and Technologies for Sustainable Growth September 19–21, 2013, Bled, Slovenia
- Intermetallics 2013 September 30 – October 4, 2013, Banz, Germany

OCTOBER 2013

- COM 2013 incl session on Applied Neutron Scattering in Engineering and Materials Science Research October 27–31, 2013, Montreal, Canada
- ISIEM 2013: International Symposium on Inorganic and Environmental Materials October 27–31, 2013, Rennes, France

DECEMBER 2013

- Neutron Scattering and X-Ray Studies for the Advancement of Materials at Thermec 201 December 2–6, 2013, Las Vegas, USA

APRIL 2014

- 2014 MRS Spring Meeting and Exhibit April 21–25, 2014, San Francisco, CA, USA

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