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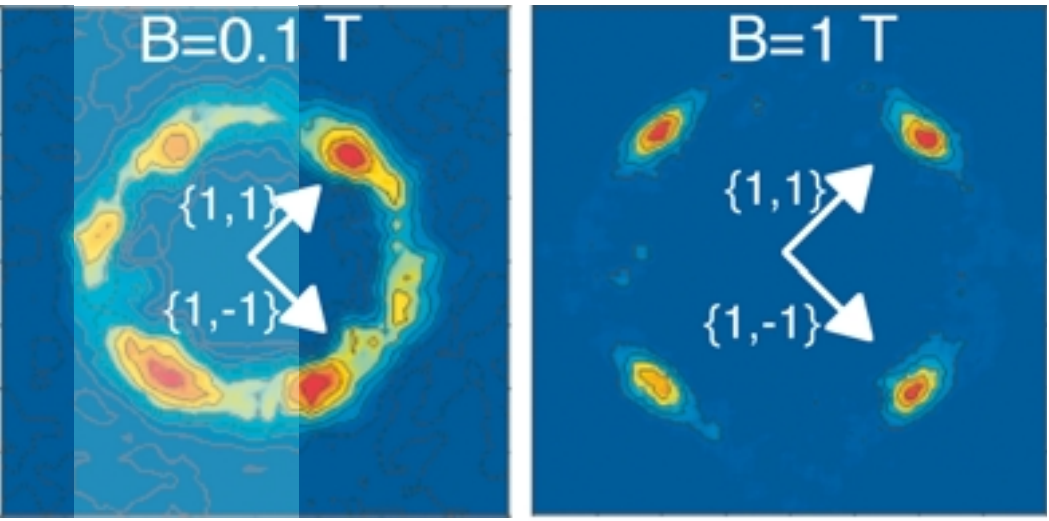

Schweizerische Gesellschaft für Neutronenstreuung
Société Suisse pour la Diffusion des Neutrons
Swiss Neutron Scattering Society

Editorial

Editor: Swiss Neutron Scattering Society

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Cover illustration

SANS diffraction patterns of the vortex lattice in the high-temperature superconductor $La_{2-x}Sr_xCuO_4$. As the applied field is increased the vortex lattice changes from hexagonal (left) to square (right). (see contribution in this issue).

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The SGN/SSDN President's Page

Dear members,

the last year had been clearly dominated by the preparation of the strategy paper 'Status und Zukunft der Neutronenstreuung in der Schweiz', a study of the status of neutron scattering in Switzerland and its perspectives for the next 15 years. The study demonstrated the importance of neutron scattering in Switzerland and the existence of a strong and active community. It also clearly showed the importance of SINQ as our home base, and the still existing need for beam time at ILL. However, the survey also clearly showed that the participation of Switzerland and a future 3rd generation neutron source will be vital in order to extend the currently accessible range of problems and tackle the most interesting and important scientific questions of the future.

This year our society consequently began to actively work on the future of neutron scattering in Switzerland and started several initiatives in this direction. First we contacted the Swiss Federal Office for Education and Research ('Swiss Bundesamt für Bildung und Wissenschaft, BBW') in order to propose a Swiss contribution to the 'European Spallation Source Project, ESS'. In response to our initiative the BBW has now indeed granted financial support for the ESS project for the years 2002 and 2003. In view of the previous activities of the PSI in the context of the ESS project, the PSI will sign the corresponding memorandum of understanding (which meanwhile has been signed). I believe that this action sets an important signal and clearly indicates that Switzerland is willing to actively participate in creating the next generation of neutron sources.

Another important event in this context has been the international ESS conference on May 16–17 in Bonn (see contribution in this issue). A large part of the European user community was present, and another day (the 15th) was reserved for satellite meetings where many European neutron scattering associations had their national assemblies. The SGN was also among those and took the opportunity to signal its support for the ESS project. I do believe that this event was important in order to present the convincing scientific case for a new European neutron spallation source to the public and the political decision makers and to give a clear sign for the strong support from a large and very active scientific community. I think the demonstration by the scientists was indeed impressive, and I only hope that the European decision makers do follow and

support us in our strive for a leap into the next generation of large scale research facilities. The ESS certainly will be important not only for basic research, but allow us to tackle many new problems of technological and economical relevance.

At the general assembly Albert Furrer also announced that he will retire from his function as Swiss representative of the European neutron scattering association ENSA, and we had to elect the new representative of our society in ENSA. I would like to take this opportunity and thank Albert for his time and effort that he had dedicated to this important professional association for example as a chairman for several years. I believe that it is mostly due to Albert Furrer's contributions that our community had and still has the chance to actively participate in the development of the future of neutron scattering in Europe. I do wish his successor, Peter Allenspach, all the best for his new task and I am sure that he will continue to ensure that the interests of our community are well represented in ENSA.

It is clear that these past events are strong indications that our community is continuing to be active and productive, but it is also clear that we need to continue our effort and do all we can to guarantee a bright future for neutron scattering in Switzerland and Europe.

Peter Schurtenberger

Minutes of the SGN/SSDN General Assembly on 15/05/2002

Locality: Bundeshaus Bonn, Plenaarsaalgebäude A–B

Start: 14:01

End: 14:38

Participants: 23 members of the society, 6 non-members

1. Welcome

The president of the SGN/SSDN, Prof. Peter Schurtenberger welcomes the participants to the general assembly 2002.

2. Minutes of the General Assembly 2001

The minutes of the general assembly of the SGN/SSDN from Nov 16, 2001 published in Swiss Neutron News 20 (Dec 2001) are accepted without objections.

3. Annual Report of the Chairman (P. Schurtenberger)

The president reports on the activities of the SGN/SSDN in the year 2001:

a) One of the main activities of the society in 2001 was the preparation of the strategy paper 'Forschung mit Neutronen in der Schweiz – eine Strategie für die nächsten 15 Jahre'. The final version of the document has been distributed among the relevant organisations. The report is also available on the SGN-webpages.

b) The president of the SGN/SSDN has contacted the 'Swiss Bundesamt für Bildung und Wissenschaft, BBW' in order to propose a Swiss contribution to the 'European Spallation Source Project, ESS'. The BBW has now granted an amount of ¤ 45.000 (SFr. 70.000) per year for the ESS project for the years 2002 and 2003. In view of the previous activities of the PSI within the ESS project, the PSI will sign the corresponding memorandum of understanding (which meanwhile has been signed), and an amount of SFr 70.000 per year will be transferred to the ESS-project via the PSI.

c) Since the last 'General Assembly' there have been no member fluctuations within our society. Presently the number of members is 200.

4. Report of the Treasurer (S. Janssen)

Income Statement 2001:

Assets SGN/SSDN 01/01/2001: **SFr 3.224,85**

	earnings [SFr]	expenses [SFr]
member-fees (cash-box)	350,–	
member-fees (postcheque-account)	100,–	
donations	30,–	
interests	4,45	
fees postcheque-account		39,60
Total	484,45	39,60
Earnings 2001	**SFr 444,85**	
Assets SGN/SSDN 31/12/2001	**SFr 3.669,70**	

Balance Sheet 2001:	**Assets [SFr]**	**Liabilities [SFr]**
postcheque-account	2787,65	
cash-box	882,05	
Assets SGN/SSDN 31/12/2001	**3669,70**	

5. Report of the Auditors (W. Fischer)

Both Auditors (W. Fischer, P. Schobinger) have checked the balance 2001. They accepted it without any objections. The participants therefore unanimously vote for a release of the SGN/SSDN board.

6. Budget 2002

The treasurer presents the following proposal for the budget 2002:

	earnings [SFr]	expenses [SFr]
member fees	500,–	
interests	5,–	
welcome reception CH/DK workshop		346,–
welcome reception Zuoz 2002		350,–
fees postcheque-account		50,–
Total	505,–	746,–
Expenses 2002		**– 241,–**

The participants accept the budget proposal unanimously. Due to the growing lack of member fees the SGN-board has decided to send out reminders to those members who did not pay the member fee since more than a year.

7. News from the European Neutron Scattering Association, ENSA (A. Furrer)

A. Furrer resumes shortly the past 8 years of ENSA activities and points out the enormous importance of that organisation for European Neutron Scattering. The main tasks and efforts are:

– ENSA represents the European users of neutron scattering facilities

– 16 European countries are presently members of ENSA

– A major effort was undertaken to collect a profile of the European users of neutron facilities

– ENSA in cooperation with the ESF Strasbourg came up with several science reports related to the method of neutron scattering

– ENSA introduced several working groups in the field of neutron scattering instrumentation and computing

– A document was produced that aimed to show the european neutron scattering landscape for the next 20 years

Throughout the last years several organisations used the input from ENSA like the 'OECD Megascience Forum'.

A. Furrer announces that he will retire from his function as Swiss representative of ENSA in the meeting on 16/05/2002. P. Schurtenberger thanks him on behalf of the society and mentions the enormous work done by him e.g. as ENSA chairman for several years. He appreciates the Swiss influence within ENSA that is definitely a merit of A. Furrer's work. Finally a gift is presented to the leaving representative.

8. Election of a New SGN Representative in ENSA

P. Schurtenberger presents the proposal of the SGN/SSDN board for the new Swiss representative to the members: P. Allenspach as the present assistant secretary of the ENSA committee has a lot of experience in that committee work and as a professional neutron scatterer he would be ideally suited for that position. There is no other suggestion from the audience. The members elect P. Allenspach unanimously as the new Swiss representative of ENSA. He accepts the vote and thanks the members for their trust.

9. News from the Neutron Source ILL

P. Schurtenberger reports on the input he received from H.U. Güdel:

– The present board of the ILL is: C. Carlile (executive director, UK), C. Vettier (FR), W. Press (DE)

– The ILL aimes for a continued investment into the renewal of the instruments and the infrastructure according to the roadmap of the millennium program

– A partnership between the ILL and the EMBL has been settled.

– A deuteration lab will be implemented

– The CRG instruments are under scrutiny

– Due to safety regulations some refurbishements – mainly on the ILL buildings – have to be undertaken. It is aimed to minimise the impact on the user program as far as possible

– The Swiss use of the ILL is stable in the order of 3.5% of the instrument time. A continuation of the contract with the ILL on the same terms is therefore recommended

10. Acivities of the SGN/SSDN 2002/2003

The members unanimously agree that the next General Assembly again should be combined with the SINQ user meeting. It is proposed to have the assembly on 16/01/2003 the day before the SINQ committee meeting in January 2003. The date for the User meeting still has to be confirmed by the PSI.

Furthemore, a participation in one of the two SPS meetings with a dedicated neutron scattering session is proposed. A. Furrer claims that the spring meeting attracts more people and would therefore be more suited. He also states that it would be of larger impact than a dedicated neutron session if many neutron scattering contributions in various field of science would be submitted.

11. Miscalleneous

– A. Furrer remarks that the Swiss usage of ILL beamtime is not constant at 3.5% but has been continuously decreased since SINQ is in operation. Presently the use is below 3%. A new contract with the ILL should be based on a survey of this trend.

– As another activity in 2003 he proposes a strong contribution of our society at the next 'European Conference on Neutron Scattering, ECNS' in Montpellier. P. Schurtenberger agrees fully and announces that the SGN will remind their members to submit contributions and will send out informations about that conference.

S. Janssen, Secretary

Field-induced transition from hexagonal to square vortex lattice in the high-temperature superconductor $La_{1.83}Sr_{0.17}CuO_4$

R. Gilardi, J. Mesot
Laboratory for Neutron Scattering, ETHZ & PSI

Introduction

High-temperature cuprate superconductors (HTSC) are still a matter of great scientific interest, both from the theoretical and experimental point of view. Fifteen years of investigations were not sufficient to clarify the mechanism which leads to the extraordinary properties of these materials, namely zero resistance up to temperatures as high as $T_c = 133$ K.
Recent measurements in magnetic field [1–3] indicate that magnetism is likely to play an important role in the mechanism of high-temperature superconductivity. It's therefore important to investigate the magnetic properties of HTSC from the microscopic (spin fluctuations), mesoscopic (physics of vortices) and macroscopic (magnetization, susceptibility) point of views.

The magnetic phase diagram of type-II superconductors (see Figure 1) can be divided in three main regions: Meissner phase, mixed phase and normal phase. In the Meissner phase below the lower critical field $H_{c1}(T)$ the magnetic flux is completely excluded from the superconductor, whereas above the upper critical field $H_{c2}(T)$ the normal state is recovered and the magnetic field is homogeneously distributed into the sample. In the mixed phase between $H_{c1}(T)$ and $H_{c2}(T)$ the magnetic flux can penetrate the superconductor in the form of quantized magnetic vortices that interact together and create a vortex lattice (VL). These vortices consist of magnetic flux lines of radius ξ (the coherence length) surrounded by supercurrent screening the external field running over a radius λ (the penetration depth).
Knowing that the magnetic field is confined to flux lines each carrying one flux quantum Φ_o and arranged in a lattice, the symmetry of the VL is found by minimizing the free energy. The result of these calculations for isotropic systems shows that the hexagonal VL rather than the square VL is stabilized [4].

In HTSC the situation is complicated because of thermal fluctuations and anisotropy effects [5]. At high temperatures the vortices are thermally activated and the VL can

melt into a liquid phase (see Figure 1). On the other hand a small anisotropy can affect the symmetry of the VL.
Despite belonging to the family of the first HTSC to be discovered, the microscopic observation of the VL in $La_{2-x}Sr_xCuO_4$ (LSCO) has to date remained remarkably elusive. Recently, in collaboration with the universities of St. Andrews (UK), Birmingham (UK) and Hokkaido (Japan), we performed Small Angle Neutron Scattering (SANS) experiments that revealed the first observation of a clear vortex lattice structure in LSCO [6]. Moreover we were able to observe a field-induced crossover from a hexagonal to a square vortex lattice.

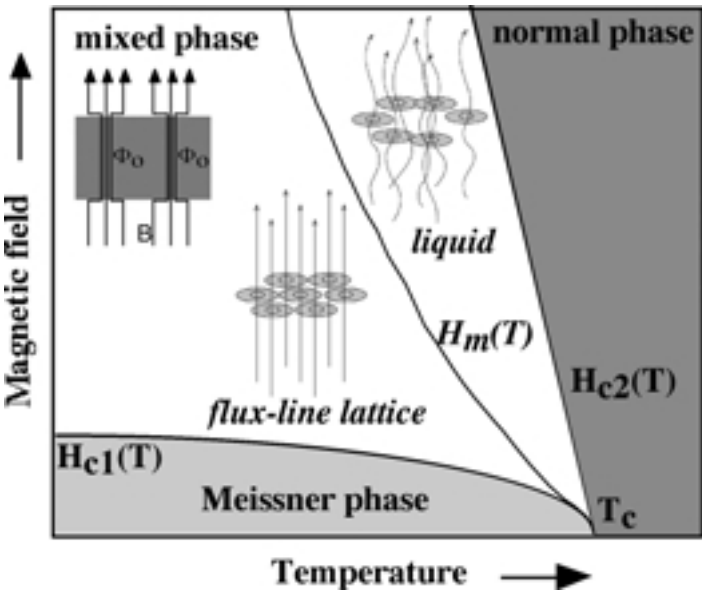
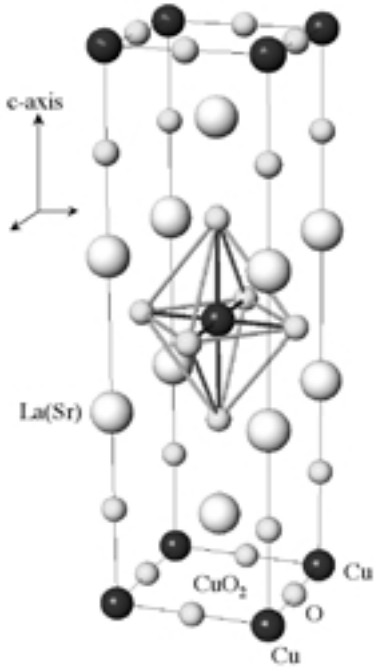


Figure 1: *Schematic view of the magnetic phase diagram of HTSC.*

Experimental

Small Angle Neutron Scattering (SANS) is a powerful experimental method to investigate the magnetic phase diagram of superconductors. The neutrons are electrically neutral and can therefore easily penetrate the sample, yielding information about the bulk of the material. Since they possess a magnetic dipole moment, they interact with any spatially varying magnetic field distribution. In the vortex lattice phase SANS measurements allow the direct determination of the VL symmetry. The distance between the flux lines being large, the first Bragg peaks are found at low angles (for neutron wavelength $\lambda n \leq 20$ Å used in SANS experiments). The 2D-detector is therefore positioned

several meters after the sample, and kept in vacuum to reduce air scattering and beam attenuation.
Our SANS investigation of the VL in LSCO has been performed on both the SANS instrument at the Paul Scherrer Institute (see Figure 2a) and the D22 instrument at the Institute Laue Langevin, France.
The sample was a slightly overdoped LSCO single crystal (x=0.17, T_c=37 K). The structure of LSCO at low temperatures is orthorhombic (see Figure 2b) with the c-axis perpendicular to the CuO_2 planes. In our notation the {1,1} direction is along the Cu-O-Cu bonds. For most of the measurements the c-axis was oriented along the magnetic field direction (applied horizontally parallel to the incident neutron beam).



a) ***b)***

Figure 2: a) *View of the horizontal 11 Tesla magnet positioned at the SANS-I instrument at SINQ (Paul Scherrer Institute).* ***b)*** *Structure of LSCO.*

Results

Figure 3 shows SANS diffraction pattern obtained at T=1.5 K after subtraction of a background taken at T=40 K ($>T_c$).
At B=0.1 T, when the field is applied along the c-axis, one observes a ring-like intensity, which is consistent with the superposition of four hexagonal domains oriented along the crystalline axes {1,0}, {0,1}, {1,1} and {1,-1}. In order to lift the degeneracy of the vortex lattice, we rotated the c-axis away from the field direction. As a result a hexagonal pattern emerges, as shown in Figure 3a.
At B=1 T the intensity is concentrated in four bright spots oriented along the {1,1} and {1,-1} directions (see Figure 3b). Even rotating the c-axis 30 degrees out of the field direction retains this fourfold coordination. The VL is only slightly distorted to a rhomboid, as expected for uniaxial anisotropic superconductors.
The experimental evidence thus indicates a field-induced crossover from a hexagonal VL at low fields to an intrinsic square VL at higher fields.

In order to quantify this field-induced transition, we analyzed our data in two alternative ways (see Figure 4). The relationship between the magnitude q of the wavevector of the VL and the applied magnetic field B depends on a structure dependent quantity $\sigma = \left(\frac{2\pi}{q}\right)^2 \frac{B}{\Phi_0}$, where σ is equal to 0.866 and 1 for hexagonal and square VL, respectively. For fields larger than B=0.4 T the values of σ are as expected for a square VL, whereas at lower fields they are consistent with that of a hexagonal VL. We also monitored the intensity ratio in sectors (± 15 degrees) containing the {1,0} and {1,1} directions for fields applied parallel to the c-axis. Since at low fields we have a ring-like intensity and at high fields only four spots along the {1,1} direction, the ratio between the intensities along the {1,0} and {1,1} direction is a good measure of the transition. Indeed the intensity ratio decreases steadily from 1 at B=0.1 T to about 0.2 above B=0.4 T and then remains constant.

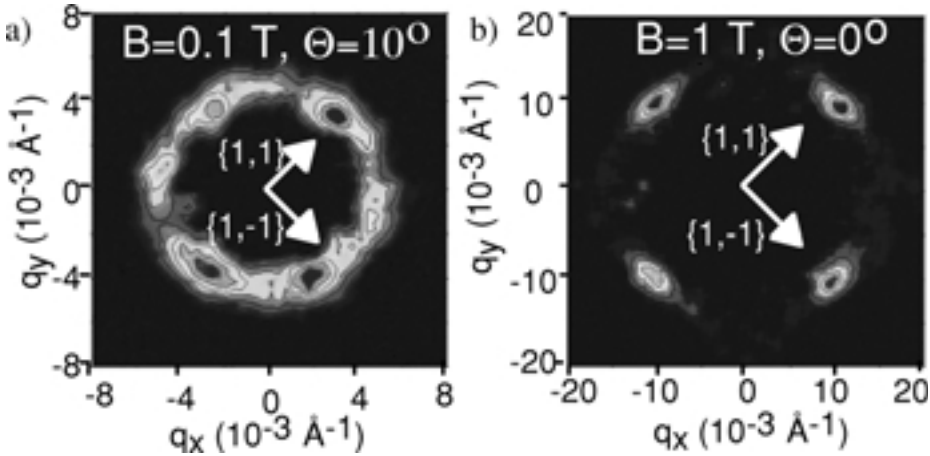


Figure 3: *SANS diffraction pattern at* ***a)*** *B=0.1 T applied 10 degrees out of the c-axis and at* ***b)*** *B=1 T applied parallel to the c-axis.*

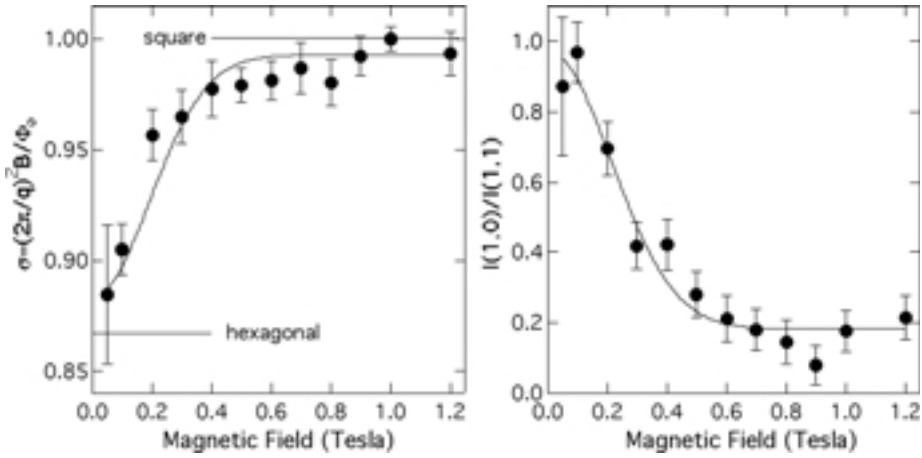


Figure 4: *Two alternative ways of quantifying the field-induced transition from hexagonal to square VL (see text).*

Conclusions

Our SANS experimental results indicate that, in slightly overdoped LSCO, an intrinsic square vortex lattice (oriented along the Cu-O-Cu bonds) exists at fields larger than 0.4 Tesla. This intrinsic fourfold symmetry is indicative of the coupling of the VL to some source of anisotropy. A possibility is that the square VL results from the anisotropic (d-wave) nature of the superconducting gap [7,8] via the increasing importance of the anisotropic vortex cores at high fields.

A similar effect is also expected in YBCO (another HTSC), but at higher fields (because of the larger energy gap and Tc). Indeed recent measurements on the SANS instrument at the Paul Scherrer Institute suggest a field induced transition to a square VL around 9 Tesla in slightly overdoped YBCO [9]. The main difference with respect to LSCO is that in YBCO the square VL is oriented at 45° from the Cu-O-Cu bonds.

It's interesting to notice that early VL calculations based on d-wave gap functions predicted the square VL to be oriented along the Cu-O-Cu bonds [7], which is exactly what our experimental data in LSCO reveal. However more recent studies indicate that the square VL tilted 45° from the Cu-O-Cu bonds should be favored [8]. Our results provide an important stimulus to resolve these theoretical discrepancies.

In principles other sources of anisotropy, such as those involving dynamical stripes, charge-density wave or Fermi surface anisotropies, could lead to the formation of a square vortex lattice. It remains a challenge to corroborate detailed SANS measurements with other microscopic data in order to explain the origin of this exotic vortex behavior.

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Sample Environment at SINQ

M. Zolliker
Laboratory for Neutron Scattering, ETHZ & PSI

The broad range of research topics investigated at SINQ requires not only a large zoo of neutron scattering instruments but also a large collection of sample environment devices. At present, any temperature between 100 mK to 1400 K, any magnetic fields up to 9 T and any high pressure up to 15 kbar may be achieved. The PSI-Risø collaboration helped to complete the sample environment park in the direction to higher magnetic fields and very low temperatures for single crystals. In the following tables devices from Risø National Laboratories are marked with an asterisk(*).

Closed cycle refrigerators are technically the simplest way to achieve any temperature in the range between 4 K and 475 K.

Name	**Manufacturer**	**T-range [K]**	
CTI1	Cryophysics	15...325	
CTI2	Cryophysics	15...325	
CTI3	Cryophysics	15...325	
CTI4	Cryophysics	30...475	high T range
CTI5	Cryophysics	20...325	high power model for pressure cells
CTI6	Cryophysics	12...475	high T range, dedicated to FOCUS
APD	APD Cryogenics	10...450	dedicated to TriCS
DISC	APD Cryogenics	12...325	dedicated to RITA-II
DISE	APD Cryogenics	12...325	dedicated to RITA-II
DISL	Leybold	12...325	dedicated to RITA-II
CCR4K	SHI	4...325	

Helium cryostats are needed for temperatures down to 1.5 K. The working horse is the ILL type Orange cryostat.

Name	**Manufacturer**	**T-range [K]**	
ILL1	AS Scientific	1.5...325	small diameter (50 mm)
ILL2	AS Scientific	1.5...325	
ILL3	AS Scientific	2...600	Cryofurnace
ILL4	AS Scientific	1.5...325	dedicated to FOCUS
ILL5	AS Scientific	1.5...325	large diameter (100 m)
ORI1*	AS Scientific	1.5...325	mainly for RITA-II
ORI2*	AS Scientific	1.5...325	mainly for RITA-II
ORI3*	AS Scientific	1.5...325	large diameter (100 m)
HEF4C	ILL	1.8...325	dedicated to TriCS
Variox*	Oxford Instruments	1.5...325	for use in conjunction with the dilution insert

Dilution cryostats are used for very low temperatures down to millikelvin temperatures. The two devices RDR11 and RDR12 are to be used one after the other on the same instrument. This enables to change the sample on the instrument every 3 days with only a short loss of beam time. For temperatures down to 300 mK a ^{3}He cryostat exists also, but it is not yet in operation.

Name	Manufacturer	T-range [K]	
RDR11	LTF Group (PSI)	0.12...4	for powder samples
RDR12	LTF Group (PSI)	0.12...4	for powder samples
DIL*	Oxford Instruments	0.06...1	dilution insert, in conjunction with Variox, MA02 or MA09. Not for powder samples.

Actually, we have two **furnaces** available. Both are constructed at the PSI. A third device manufactured at the ILL is out of operation. On high demand the device will be repaired.

Description	T-range [K]	
small furnace	300...750	relatively bad absolute temperature accuracy
tantalum furnace	300...1400	controlled atmosphere for the sample container possible

The **Cryomagnets** MA02 and MA09 may be combined with the dilution insert. This makes it possible to measure at high fields and very low temperatures simultanously.

Name	Manufacturer	T-range [K]	
MA09*	Oxford Instruments	1.5...300	up to 9 Tesla vertical (7.5 T standard)
MA02*	Oxford Instruments	1.5...300	up to 1.8 Tesla horizontal
SM04	Thor	4.2...100	up to 4 Tesla vertical

The clamp cell **pressure devices** are manufactured at the Institute for High Pressure Physics (RAS Moscow).

Description	Max. Pressure
Clamp cell	15 kbarfor powder diffraction
Clamp cell	9 kbar for powder diffraction
Clamp cell	10 kbarfor inelastic experiments
Uniaxial pressure cell	depending on crystal size (force 10 kN)

The above listed equipment may be used on most of the neutron scattering instruments, except for the small angle scattering instruments. For the sample environment of SANS-I its web page may be consulted (http://sans.web.psi.ch).

The schedule of the different devices to the SINQ instruments may be consulted at http://sinq.web.psi.ch/sinq/user_program.html (last link on the list, access from outside PSI may be restricted).

Fig. 1: *The Orange Cryostat on FOCUS is filled automatically with liquid nitrogen (picture) and liquid helium.*

Fig. 2: *Vertical field cryomagnet MA09 on RITA-II*

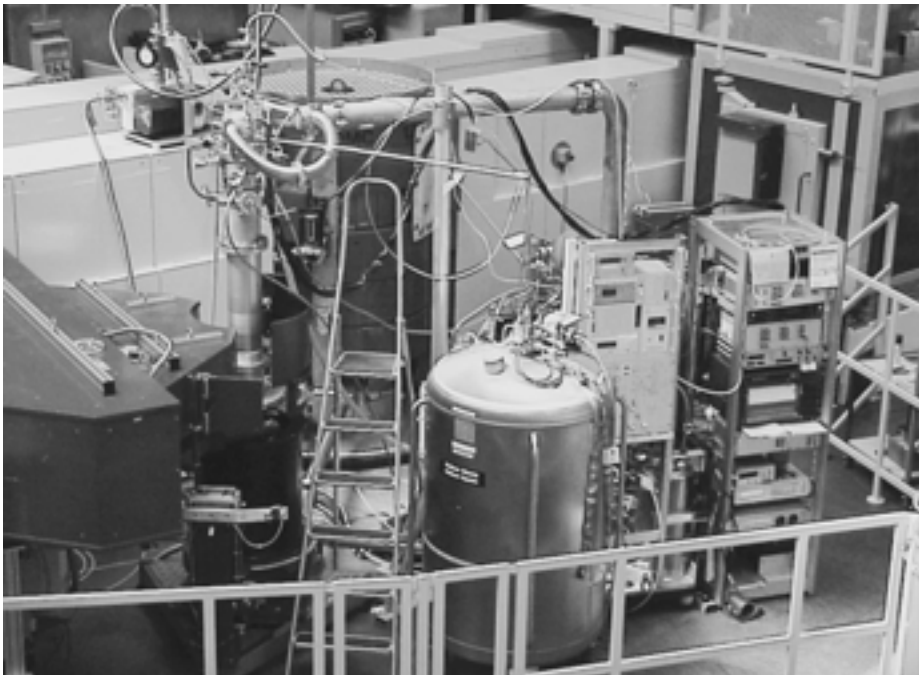

Fig. 3: *The dilution cryostat RDR12 on DMC.*

10th Anniversary of Swiss Neutron News

P. Böni
Physics Department, TU Munich

A simple question: What does $10 \cdot 2 = 20$ have to do with Swiss Neutron News (SNN)? The answer: During the last 10 years, the Swiss Neutron Scattering Society (SGN) has distributed 20 issues of SNN. As a society with an international touch we have usually printed more then 1000 copies and distributed them worldwide. Without any doubt, the wide distribution of SNN has contributed to a better visibility of the Swiss neutron scattering community (the strongest per capita) in the world and to an excellent advertisement of the SINQ spallation source at Paul Scherrer Institute. Without any doubt, Swiss Neutron News has helped to attracted good science to Switzerland and has strengthened the international collaboration as evidenced for example by the move of the best neutron scattering instruments from Risø National Laboratory to SINQ.

On the occasion of the foundation of SGN as one of the first neutron scattering organizations worldwide it was decided to improve the contact within the neutron scattering community in and around Switzerland by distributing twice a year a bulletin called Swiss Neutron News. The goal was and still is to discuss openly questions relating to neutron scattering in general, important events and decisions, advertise international conferences as well as to publish scientific contributions. In addition SNN also serves as bulletin to distribute the minutes of the yearly assembly of the SGN. We were happy to see that the scientific and political decision-taking people in Switzerland accepted the content of SNN soon as official opinion of the Swiss neutron scattering community. It is with pleasure to find Swiss Neutron News at the newsstands of various international neutron scattering centers.

I had the pleasure to be the editor of Swiss Neutron News from the beginning in 1992 until 2000. Although, collecting articles for SNN was sometimes time consuming I enjoyed the job because it helped to build up excellent relations to many scientists and I learnt to realize the importance of advertising neutron scattering. Moreover, I felt that many colleagues really enjoyed SNN. The undertaking SNN would have not been possible without the generous help of my colleagues at the Laboratory for Neutron Scattering at Paul Scherrer Institute and the help of the printing department of PSI. I am very happy to see that after my retirement as secretary and editor from the board of the Swiss Neutron Scattering Society in Summer 2000, my duties were taken over by Stefan Janssen. Thanks to his effort, the old fashioned blue envelope of the first 18 numbers of SNN evolved rather dramatically into a modern colored magazine. I wish Stefan and the SGN all the best for a bright future with many neutrons.

Announcements

New SGN/SSDN members

The Swiss Neutron Scattering Society welcomes a new member, namely
- Gregory Chaboussant, University of Bern

Presently the SGN/SSDN has 201 members.

SGN/SSDN member fees

The annual member fee (CHF 10,–) of our society is comparably low. Nevertheless we recognized a significant shrinkage of member fees during the last two years. Therefore we kindly ask our members to check up to when you have paid the fee and to bring up the missing amount. You can either pay using our postcheque account (50-70723-6) or send the money in cash to our secretary. In case of questions please contact: 'stefan.janssen@psi.ch'

SINQ proposal deadline

The next deadline for the submission of proposals for SINQ will be

15 November 2002

Since the successful proposal of SINQ for the 5th Framework Program of the EU the number of submitted proposals has increased significantly from the former average of 54 proposal per cycle up to 86 and 78 proposals within the last two cycles. In both cycles (I and II/02) about 50% of the proposers are eligible within the grant program. For more detailed information please have a look at the SINQ webpages (sinq.web.psi.ch).

Conferences 2002/2003

date	place	conference
10 – 13/07/02	Cracow	Int. Conference on Strongly Correlated Electron Systems (SCES 2002)
13 – 18/0702	Davis, USA	23rd Rare Earth Research Conference www.cevs.ucdavis.edu/Cofred/Public
14 – 19/07/02	Florence	4th Int. Conf. on 'Science and Engineering of High-T_c Superconductivity' www.dinamica.it/cimtec
01 – 05/08/02	Rigi, CH	Crystal Physics, Measuring, calculating and predicting physical properties of crystals www.kristall.ethz.ch/DGK/aks/ak5/rigi2002.html
04 – 06/08/02	PSI Villigen	Neutron and Synchroton X-Ray Scattering in Cond. Matter Research (IUCr-Satellite)
04 – 09/08/02	Houston	Applied Superconductivity Conference www.ascinc.org
06 – 15/08/02	Geneva	19th IUCr Congress
10 – 16/08/02	Zuoz, CH	PSI Summer School on Condensed Matter Research: Magnetism http://psw100.psi.ch/www_sls_hn/zuoz_cmr2002/
11 – 14/09/02	Jülich/Aachen	1st Summer School on Polarized Neutron Scattering www.fz-juelich.de/iff/termine/PNCMI-2002
15 – 20/09/02	Rome	7th World Conference on Neutron Radiography http://www.cost524.com/wcnr
16 – 19/09/02	Jülich/Aachen	International Workshop on Polarized Neutrons for Condensed Matter Investigations www.fz-juelich.de/iff/termine/PNCMI-2002

date	place	conference
16 – 27/09/02	Jülich	6th Laboratory Course on Neutron Scattering http://www.neutronscattering.de/labcourse.html
12 – 14/12/02	Grenoble	Workshop on Single Crystal Neutron Spectroscopy (SCNS) www.ill.fr/Events/ONSITE/SCNS/index.html
22 – 25/01/03	Grenoble	2nd Workshop on Dynamics in Confinement www.ill.fr/Events/Onsite/confit2003/confit.html
19 – 30/05/03	Trieste	Spring School on "Magnetic Properties of Condensed Matter Investigated by Neutron Scattering and Synchroton Radiation"
27/07 – 01/08/03	Rome	International Conference on Magnetism (ICM) www.icm2003.mlib.cnr.it
03 – 06/09/03	Montpellier	3rd European Conference on Neutron Scattering (ECNS 2003) http://www.ldv.univ-montp2.fr:7082/~ecns2003/

ESS Conference and SINQ User Meeting in Bonn

S. Janssen
Laboratory for Neutron Scattering, ETHZ and PSI

Since several years strong efforts have been undertaken to launch the project of the 'European Spallation Source, ESS' in order to ensure the prospects of neutron scattering in Europe. In Japan and in the United States similar projects are on their way and without ESS Europe's leading role in neutron scattering will be seriously compromised. For SINQ as one out of two existing neutron spallation sources in Europe it was obvious to support the ESS project by the presence of many of its users during the first European ESS conference in Bonn (15–17/05/2002) and by the organization of the 2002 user meeting as one of the satellite meetings of the conference. Further user meetings have been held in Bonn as well (e.g. the BENSC/Hahn Meitner Institute meeting) and several organisations and projects as the Neutron Round Table, the ENSA, TECHNI, SCANS and several others came together. Also the Swiss Neutron Scattering Society as well as the national organizations from Germany, The Netherlands, Italy, France, Poland and Scandinavia agreed to organize their annual meetings 2002 in Bonn.

It was very encouranging that more than 30 SINQ users came to Bonn who submitted 22 contributions. The user meeting consisted of several oral sessions on May 15 and the participation in the joint poster session on May 16. After general informations about

Fig. 1: *The former german parliament building in Bonn served as location for the first European ESS conference and the SINQ user meeting 2002.*

SINQ, the user program and the instrumentation totally 8 invited scientific talks were presented. They clearly documented the topical diversity of the problems studied at SINQ. Talks from the field of high-temperature superconductivity and magnetism attracted a broad interest as well as contributions from the fields of soft condensed matter or materials science.

The obvious main focus of the conference that was held at the former german parliament buildings beside the river Rhine was the public presentation of the ESS project and the application of the 5 candidates for the ESS location: Chilton, Yorkshire (both UK), Jülich, Halle/Leipzig (both DE) and Lund (Scandinavia). Totally 853 participants, several politicians and many journalists from newspapers and electronic media documented the enourmous significance of the project not only for science.
Now the ESS case has been handed over from the scientists to the politicial decision makers. It will be seen in the near future how large the acceptance of the project is and what the impact of the well received public presentation has been.

For the neutron scattering community we wish the ESS project a great success!

Fig. 2: *The 'Plenarsaalgebäude' during the presentation.*

Fig. 3: *The audience of the SINQ user meeting.*

Figs. 4: *Impressions during the poster session.*

Fig. 5: *The conference dinner war organized during an impressive cruise on the river Rhine between Bonn and Bad Godesberg.*

SANS-II: Installation of the Second Danish Instrument at SINQ

S. Janssen, P. Strunz, Laboratory for Neutron Scattering, ETHZ and PSI
K. Mortensen, Danish Polymer Centre, DK-4000 Roskilde

After the ratification of the contract between PSI and Risø National Lab. early 2001 and RITA-II being operational since summer 2001 the next milestone of the Swiss/Danish cooperation on neutron scattering had to be achieved: the installation of the second danish instrument - the former Risø SANS facility - at SINQ. That instrument was very succesfully operational at the DR3-reactor in Denmark for many years and attracted a large user community.

On April 18 the instrument distributed among 25 wooden cases and one huge shipping container reached PSI per lorry. At the same time 4 technicians and engineers from Risø came to PSI for installing the instrument together with the PSI/LNS staff members. The uncertainty that something could fail was replaced quite soon by the assurance that the instrument could be installed within a 'record-time' of 8 days only. This was mainly possible due to the perfect preparation of the transport by the Risø staff members.

On April 26 the instrument was installed and adjusted at its new position on guide RNR12 in the SINQ guide hall. The remaining electrical installations were quickly done after that by the PSI technicians.

Fig. 1: *18/4/2002: at 7:30 a.m. the lorry with 25 wooden cases and the shipping container arrives at PSI. First of all the material has to be unpacked and ordered.*

The instrument which will be mostly used in the fields of soft condensed matter, materials science and magnetism is presently tested with neutrons. It will be fully available to the users from summer 2002 on. SANS-II, which is the new name of the instrument, will be used half by the danish and half by the SINQ user community.

Finally we would like to thank cordially all the people who have been involved in the project of transport and installation of the new SINQ instrument.

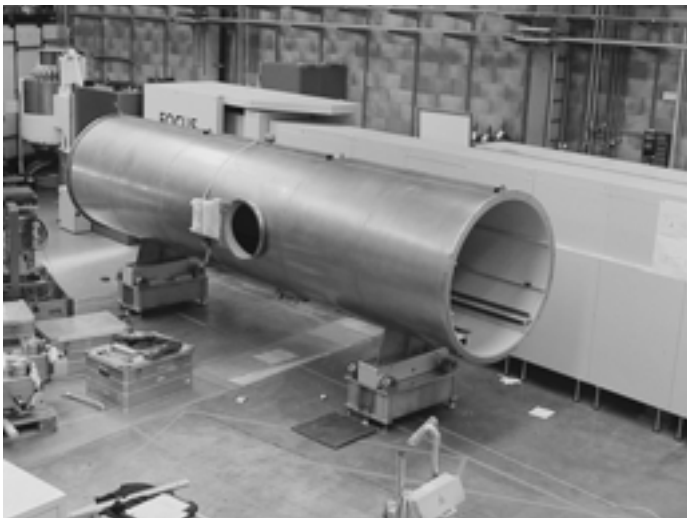

Fig. 2: *The 6m detector tank during its installation in the SINQ guide hall.*

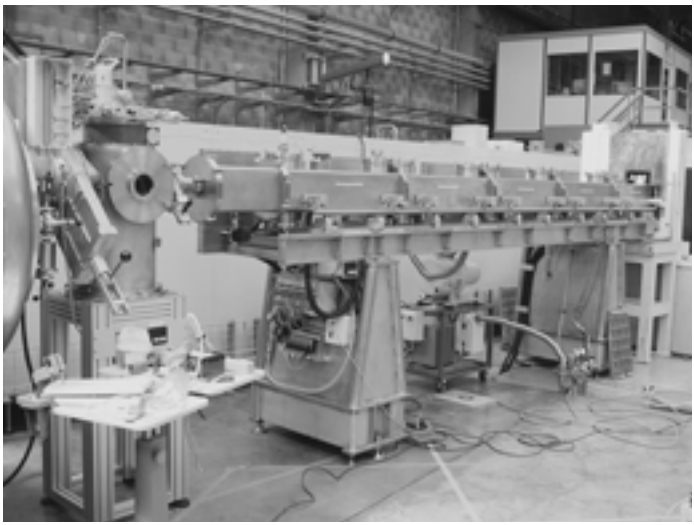

Fig. 3: *Special care had to be taken to the adjustment of the collimator relative to the existing neutron guide.*

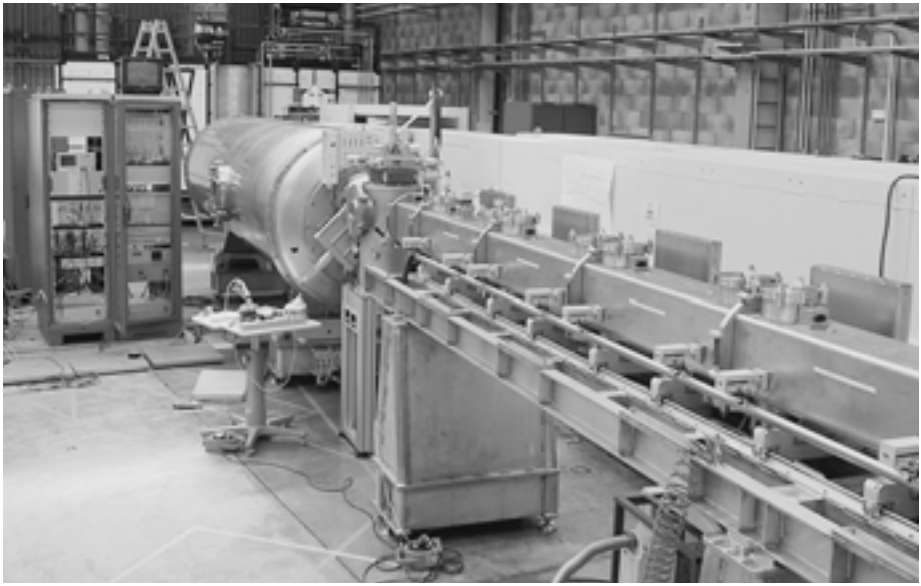

Fig. 4: 26/4/2002: *Done! The mechanical installation together with the internal cabling of the instrument has been completed within 8 days only.*

Fig. 5: *Part of the team that was involved in the installation. Many thanks to all our colleagues who helped in the project.*

INSTITUT MAX VON LAUE
PAUL LANGEVIN

NEUTRONS
FOR SCIENCE

DA/SPRH/GR08-10/06/02
ILL ref. **02/12**

VACANCIES

The Institut Laue-Langevin (ILL) is an international fundamental research institute funded by France, Germany and the United Kingdom. Agreements on scientific collaboration have also been signed with Austria, the Czech Republic, Italy, Russia, Spain and Switzerland. The Institute operates a high-neutron-flux research reactor, which is used to conduct experiments in the following disciplines: the structure and dynamics of condensed matter, with applications in physics, biology and materials science, and nuclear and elementary-particle physics. The instruments at ILL are available to guest scientists who are assisted by the Institute's scientists.

The Reactor Division's Shift teams & Site Security Service currently has a vacancy for two

ELECTROMECHANICAL TECHNICIANS (m/f)

DUTIES

After receiving training, the successful candidates will work as **electromechanical technicians** in the shift teams of the Service's Operations Group, responsible for the continuous operation of the reactor.

They will also assist with various tasks carried out by the Group, including
- surveillance, monitoring and repairs on the technical installations
- preparation and conditioning of hydraulic circuits and miscellaneous fluids
- operating ILL's electrical installations
- preparation and performance of tests on the reactor installations
- preparation and updating of operating documents.

Working hours: shift work on a rota basis.

QUALIFICATIONS AND EXPERIENCE

NVQ Level 4 (e.g. BTEC HND) in Industrial Maintenance, Mechanical or Electrical Engineering, or equivalent.

At least 2 or 3 years experience of work in industrial conditions. The applicants must be capable of working alone or as part of a team. They must show initiative and good organisational skills.

GRADING AND REMUNERATION

Technicien Supérieur ("Senior technician")
Commensurate with qualifications and experience

NOTES

This post is permanent.
Knowledge of French and/or German would be welcome.

FURTHER INFORMATION

Mr L. BRAYER - tel. (33) 4 76 20 71 15

CLOSING DATE

14.07.2002

Applications for these posts should be addressed, quoting **reference 02/12**, to:

The Head of Personnel
INSTITUT LAUE-LANGEVIN
B.P. 156 - 38042 GRENOBLE CEDEX 9 - France
http://www.ill.fr

INSTITUT MAX VON LAUE
PAUL LANGEVIN

NEUTRONS
FOR SCIENCE

DA/SPRH/GRH-10/06/02
ILL ref. **02/09**

VACANCY

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The Reactor Division currently has a vacancy for a

SECURITY GUARD (m/f)

DUTIES:

The successful candidate will be part of a 24-hour security service covering the various parts of the ILL site and providing round-the-clock surveillance of persons and installations.

The staff of the Site Security Group are primarily responsible for the reception of visitors entering the site. However, they are also responsible for taking initial emergency action in the event of a fire or an accident.

This vacancy is aimed in particular at anyone able to work outside normal working hours and capable of carrying out safety interventions.

Applicants must enjoy contact with the public. They must also have the necessary relational and communication skills (tact, discipline and maturity) to ensure that the various site regulations are respected.
Sound reception and service skills are essential for this post.

Professional experience as a security guard or in a post involving reception duties would be an advantage.

QUALIFICATIONS AND EXPERIENCE:

Good secondary education.
Basic knowledge of French would be appreciated.
Recognised first-aid certificate would also be an advantage.

GRADING AND SALARY:

"Agent de Sécurité" (Security guard).
Commensurate with qualifications and experience.

NOTES:

This post is permanent.
Further information can be obtained from Mr Robert Coda; E-mail: rcoda@ill.fr

CLOSING DATE:

14.07.2002

Applications for this post should be addressed, quoting reference **02/09**, to :

The Head of Personnel
INSTITUT LAUE-LANGEVIN
B.P. 156 - 38042 GRENOBLE CEDEX 9 - France
http://www.ill.fr

SINQ

Swiss Spallation Neutron Source

RESEARCH PROPOSAL

Paul Scherrer Institute (PSI)
SINQ Scientific Coordination Office
WHGA/147, CH-5232 Villigen PSI, Switzerland
Phone: +41 56 310 2087, Fax: +41 56 310 2939
Email: SINQ@psi.ch, Web: sinq.web.psi.ch

Experiment Title:	**Proposal number** (to be completed by SINQ-SCO)

[ ] **Short term proposal (next allocation period)**	[ ] **Long term proposal (2 years)**

Proposer *(to whom correspondence will be addressed)* Name and first name: Address:	Phone: Fax: Email:

Co-proposer(s):
Name: Address: *(if different from above)* Phone/Fax/Email:

Sample description

Substance and formula: Mass: Size:

[ ] Polycrystalline [ ] Single crystal [ ] Multilayer [ ] Liquid [ ] Gas

Sample Container: Space group: Unit cell: a= b= c=

Area of Research

[ ] strongly correlated electron systems [ ] quantum spin systems [ ] superconductivity
[ ] structure [ ] dynamics [ ] magnetism [ ] materials science
[ ] polymer systems [ ] colloidal systems [ ] biological systems [ ] others

Hazard

Is there any danger associated with the sample or sample environment?
[ ] No [ ] Yes [ ] Uncertain If yes or uncertain, please give details of the risks associated:

Experimental details

Instrument	**Days**	**Sample cond.:** Temp., Pressure, Magn. field	**Exp. cond.:** E, ΔE, λ, Δλ, Q, ΔQ

[ ] **New SINQ user** [ ] **New proposal** [ ] **Continuation of……..** [ ] **Resubmission of……..**

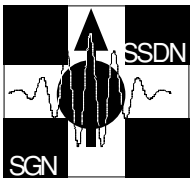
Requested dates:	**Unacceptable dates:**

Experiment Title:

Research funded by:

Scientific background/Aim of experiment: *(Please restrict to the space given within this box!)*

I certify that the above details are complete and correct.
Date: Signature of proposer:



Schweizerische Gesellschaft für Neutronenstreuung
Société Suisse pour la Diffusion des Neutrons
Swiss Neutron Scattering Society

Anmeldeformular / Registration Form

Name / Surname ……

Vorname / First Name……..……..

Akad. Titel / Academic Degree ……

Geschäftsadresse / Business Address ……

…….……...

…….……...

Telefon / Phone ……

Fax ……

E-mail ……

Privatadresse / Home Address ……...…….

…….……...

…….……...

Zustelladresse / Mailing Address: O Geschäft / Business
O Privat / Home

Datum / Date Unterschrift / Signature

…… ……...

Please submit to: **Secretariat SGN/SSDN, c/o Laboratory for Neutron Scattering, bldg. WHGA/147, Paul Scherrer Institute, CH-5232 Villigen-PSI**