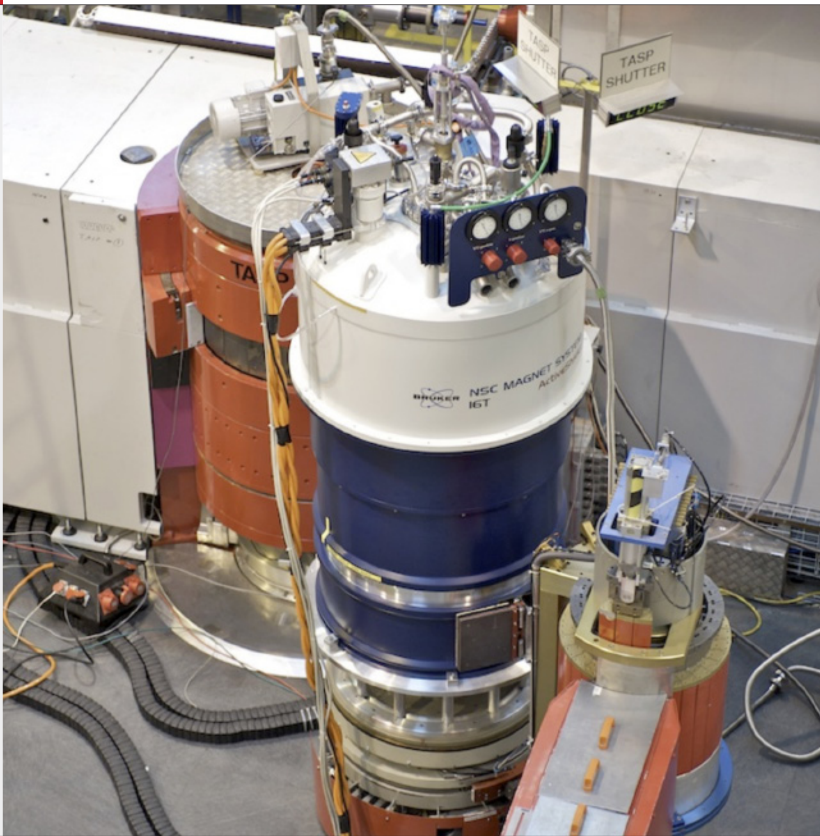
Number 36
December 2009

SWISS NEUTRON NEWS



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

EDITORIAL:

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IBAN: CH39 0900 0000 5007 0723 6

Printing: Paul Scherrer Institut

Circulation: 2200, 2 numbers per year

ON THE COVER:

Magnet test in asymmetric mode with polarized neutrons on TASP (SINQ),
see related article by P. Allenspach.

Contents

The President's Page

DEAR MEMBERS

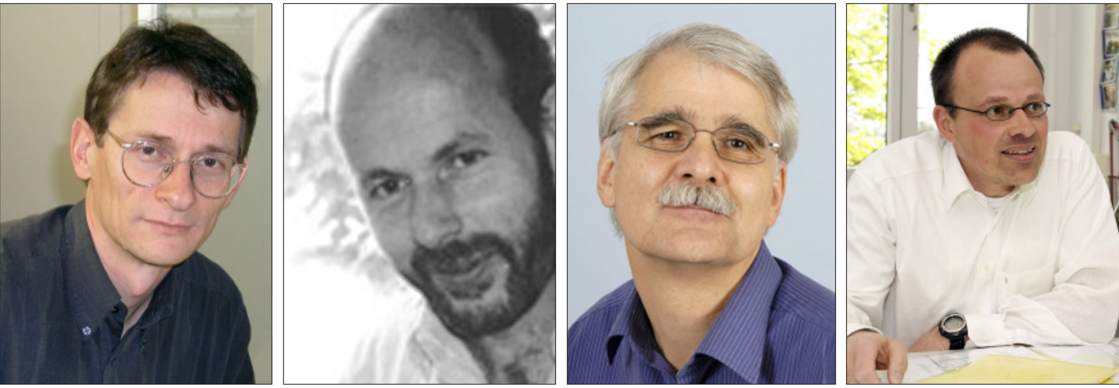
Let me start by thanking the past president and board members of the Swiss Neutron Scattering Society Peter Allenspach (president since 2004), Silvio Decurtins (board member since 1998), Bernd Schönfeld (board member since 2004) and Stefan Janssen (secretary since 2000) for their strong engagement. In his combined capacity being also Chairman of the European Neutron Scattering Association (ENSA), Peter Allenspach has done a tremendous work to the benefit of neutron scattering – not the least in relation to the European Spallaiton Source (ESS) project. The new chairman of ENSA is Michael Steiner (Berlin).

Secondly let me present the new board: Anna Stradner (Adolphe Merkle Institute, University of Fribourg), Michel Kenzelmann (Laboratory for Developments and Methods, PSI), and Urs Gasser (Laboratory for Neutron Scattering, PSI). You can read briefly about them on the following pages. We thank you – the previous board, and the members – for your vote of confidence, and will strive to honor it well. Needless to say that we are open to and welcome any suggestion for activities or topics that the Swiss Neutron Scattering Society could pursue in the future.

Indeed, the coming years are exciting for neutron scatterers – not just in Switzerland – but also on the international scale. The Spallation Neutron Source (SNS) in USA is still ramping up operations, the site decision (Lund, Sweden) for the corresponding European Spallation Source (ESS) project moved it one step closer to realization, and our national facility SINQ is steadily improving flux and instrumentation. Seen from a Swiss perspective, it is now important to balance the extent, type and timeframe of involvement in these facilities.

A good example is the 16T shielded magnet, which is now being tested at PSI, and will be shipped to SNS early 2010 – see article about the magnet within this issue. It was clear that involvement on some level in the SNS would be beneficial to the Swiss neutron scattering community. In my opinion – and I can say this having had no personal involvement – it was an excellent choice to channel this involvement into the contribution of a specific state-of-the-art capability – a high field magnet. It makes a modest contribution to the 1.4b$ facility visible and lasting. Moreover, it demonstrated a cohesion between the handful of partners SGN, PSI, MaNEP, Bruker and the Swiss secretary for education and research (SER) – a cohesion that gives me great confidence for similar success in the future.

The future European Spallation Source – ESS – is much closer and require larger Swiss



The former SGN board: Peter Allenspach (president), Silvio Decurtins, Bernd Schönfeld and Stefan Janssen (secretary).

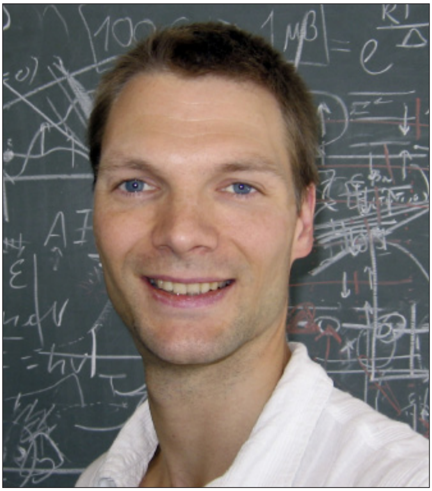
involvement on several levels. Indeed, the Swiss secretary for education and research (SER) have expressed the general willingness to enter as ESS partner on the 3–4% level. It is now our task – SGN and the Swiss neutron community – to provide SER with a clear vision on the use and need of ESS for the Swiss neutron community. To participate in the process refining source and instrumentation choices. And to identify areas of specific practical involvement behind the 3–4% membership. Examples of targeted contributions could be expertise to the pre-construction phase, involvement in instruments of particular relevance to the Swiss community, training/PhD partnerships etc.

Meanwhile, it will be important to balance engagement in ESS with the current Swiss membership of the ILL. If ESS construction starts 2013, completion is foreseen 2018–2019. We must strive to secure a solution, where Swiss neutron users do not suffer a disturbing interim draught. This solution, of course, should take into account also the other European sources, and the aforementioned fact that the flux and instrumentation of SINQ at PSI is steadily improving.

Speaking of PSI and SINQ, the Laboratory for Neutron Scattering has a new head. It is a pleasure for us to welcome Andrey Zheludev in this role. With his experience from Brookhaven National Laboratories and the High-Flux Isotope Reactor in Oak Ridge, as well as numerous experiments world-over, Andrey will certainly help push our home source forward both for users and in-house research.

Cordially yours
Henrik M Ronnow

New SGN Board Members and Secretary



Henrik Moodysson Ronnow heads the Laboratory for Quantum Magnetism at Ecole Polytechnique Federale de Lausanne (EPFL). His research group focus on the emergent physics of correlated electron materials including quantum magnets, manganites and superconductors, using neutron scattering and low-temperature bulk methods. Before being appointed assistant professor at EPFL he obtained a PhD from Risoe National Laboratory and University of Copenhagen, held a Marie Curie Fellowship at CEA and ILL in Grenoble, worked at NEC-Laboratories America, University of Chicago, London Centre for Nanotechnology and the Paul Scherrer Institut. [lqm.epfl.ch]

Anna Stradner studied at the University of Graz/Austria where she obtained her PhD in Physical Chemistry in 1999. She then worked as a Senior Scientist in the Soft Condensed Matter Group in Fribourg/Switzerland focusing on the properties of different proteins (such as eye lens crystallins, lysozyme and casein) in solution using scattering techniques (neutron, X-ray and light scattering). She is responsible for the protein group at the Adolphe Merkle Institute in Fribourg and leads the independent joint Nestlé – University of Fribourg Research Group on Soft Matter Physics and Food. Since 2006 Anna Stradner is a member of the Scientific Committee of the Swiss Spallation Source SINQ at the Paul

Scherrer Institute. In 2008 she obtained the 'Venia Legendi' in Experimental Physics at the University of Fribourg. Anna Stradner is distinguished with the Ring of Honor awarded by the Federal President of Austria and the Recognition Award of the Austrian Federal Ministry of Science and Research.

Michel Kenzelmann is working on materials with strong magnetic fluctuations such as low-dimensional antiferromagnets, multiferroics and heavy-fermion superconductors and holds a D.Phil. from Oxford University (UK). He worked as a post-doctoral fellow in a joint appointment at the Johns Hopkins University and NIST (USA) and as an assistant professor at ETH Zürich. He now heads the Laboratory for Developments and Methods at the Paul Scherrer Institute, Switzerland, where he directs several groups specialized in sample synthesis and characterization, low-temperature/high field neutron and muon sample environments, neutron optics technologies and diverse scientific engineering capabilities.

Urs Gasser works in the small-angle scattering and reflectometry group of the Laboratory for Neutron Scattering (LNS, Paul Scherrer Institute) and is responsible for the small-angle scattering instrument SANS-II at SINQ. He conducts research projects on soft matter materials with emphasis on colloidal systems, their phase behavior, and crystallization in highly concentrated systems such as magnetic particles or temperature- and pH-sensitive microgel particles. After getting his PhD in 1999 from ETH Zürich, he worked as a post-doctoral fellow at Harvard University (1999-2001) and at the University of Konstanz (2001-2005), where he specialized on confocal real space imaging in addition to scattering techniques.

High magnetic fields and high pressure at low temperatures for neutron scattering experiments at SINQ

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The broad range of experiment carried out at SINQ requires an extensive park of sample environment devices, which is maintained and operated by the Sample Environment & Polarized Target group of the Laboratory for Developments and Methods. The Sample Environment group consists of four people, two scientists and two technicians, who help scientific users with their sample environment needs. The available equipment allows experiments at temperatures between T = 100 mK to T = 1800 K, magnetic fields up to H=15 T and pressures up to P=10 GPa.

DIVERSE ENVIRONMENT EQUIPMENT

For temperatures between T = 4.5 K and T = 325 K, closed cycle refrigerators are generally the best choice, because they are very easy to use and do not require liquid nitrogen and helium fills. We have several such refrigerators, four of which generate temperatures between T = 15 K and T 325 K, two refrigerators for temperatures between T = 4.5 and T = 325 K, two refrigerators for temperatures between T = 30 K and T = 475 K, and one refrigerator for temperatures between T = 4.5 K and T = 650 K.

In addition, we have several ILL type Orange cryostats with sample space diameters from 50 to 100 mm for temperatures from T = 1.5 K to T = 325 K. Since the accuracy of the temperature in a closed cycle machine (cold finger principle) is limited, Orange cryostats are sometimes used even for temperatures greater than T = 4.5 K. One of our Orange cryostats features a temperature extension and can generate temperature up to T = 600K.

We also operate two dilution refrigerators for sub-Kelvin temperatures, reaching routinely temperatures of typically T = 50 mK.

Our dilution refrigerators are inserts that can be used with some of our 4He cryostats or any of the cryomagnets, including a 7T and 15T vertical-field cryomagnet or a 11T horizontal-field cryomagnet.

For high temperatures, three furnaces are available covering the temperature range between room temperature and T = 1800 K. Various high pressure devices are available, including a 10 GPa opposed-anvil pressure cell (Paris-Edinburgh press) can be used in a dedicated T = 4.5 K closed cycle machine and piston-cylinder clamp cells (up to 1.5 GPa) can be cooled down to T = 1.5 K in Orange cryostats.

NEUTRON SCATTERING AT LOW TEMPERATURE AND HIGH MAGNETIC FIELDS

Magnetic fields of cryomagnets interact with magnetic components of neutron instrumentation, leading to forces on cryomagnets that limit the maximum field that can be achieved with a magnet operating on a particular neutron instrument. It is therefore important to build neutron instrumentation that is void of magnetic components. At SINQ, we have several instruments on which the maximum field of our strongest magnets can be applied, thus allowing experiments that are unique or that can only be performed at a few other places in the world. In particular, we have a small-angle scattering instrument, SANS-I where horizontal fields of H = 11 T and a cold-neutron triple-axis spectrometer where vertical fields of H = 15 T can be applied.

We will now review one experiment on the heavy-fermion superconductor $CeCoIn_5$ which was carried out using RITA-II, illustrating the importance of combining advanced neutron instrumentation with a professionally maintained low temperature/high magnetic field sample environment. Superconductors such as $CeCoIn_5$ conduct electric current without resistive loss. At the heart of superconductivity are electron pairs, the so-called Cooper pairs, which are quantum-entangled electrons. Electric current in superconductors is transported by Cooper pairs, and not by single electrons as in metallic materials. Probably the most intriguing question in the field of superconductivity concerns the coupling of electrons into Copper pairs. While this is understood in phonon-mediated superconductors, it is still a mystery in various classes of materials, such as organic, heavy-fermion and doped Mott-insulator superconductors (high-Tc superconductors).

The existence of Cooper pairs depends on the preservation of electron entanglement of their wave-functions. External magnetic fields or the ordering of the electrons in charge or spin structures perturbs the entanglement in most superconductors. In fact, in order to qualify as a superconductor, a material has to be a perfect diamagnet, which means that all magnetic fields are completely shielded from the inside of the material at sufficiently low field strength.

A similar antagonism also exists between magnetic and superconducting order, which often compete and rarely co-exist. The reason for this is that an ordered spin looses its quantum character and becomes more classical. The loss of the electron's spin quantum nature inhibits superconductivity.

While uniform magnetic fields suppress superconductivity in most materials, it is believed that magnetic fluctuations actually provide the glue for the formation of Cooper pairs in a range of materials. The magnetic nature of this coupling can lead to an interesting interplay of magnetism and superconductivity that can lead to unexpected phenomena. For example, magnetic order and superconductivity can co-exist when magnetic order and superconductivity arise from different species of electrons, thus preserving the quantum nature of the electrons that contribute to superconductivity. In so-called triplet superconductors, ferromagnetism even seems to be beneficial for superconductivity.

The sample environment capabilities at SINQ have allowed novel experiments using one of the model materials for the study of magnetically-induced superconductivity. These experiments showed that in these systems, magnetic order and superconductivity do not only co-exist, but superconductivity can also directly induce magnetic order [1]. Further, these experiments also allowed the study of the magnetism inside magnetic vortices, revealing that the vortex structure of magnetically-induced superconductors can be much more complex than in ordinary superconductors [2]. These experiments were only possible because of our advanced sample environment capabilities.

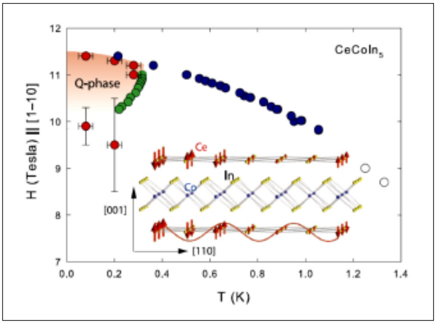

Figure 1: H-T phase diagram of $CeCoIn_5$ with the magnetically ordered phase indicated by the red shaded area. The green circles indicate a second order phase transition inside the superconducting phase, and the red circles indicate the onset of magnetic order, showing that the magnetic order only exists in the Q phase. (Inset) Magnetic structure of $CeCoIn_5$ at T = 60 mK and H = 11 T. The red arrows indicate the static magnetic Ce^{3+} moments.

COUPLED MAGNETIC AND SUPERCONDUCTING ORDER IN $CeCoIn_5$

$CeCoIn_5$ is one of the simplest model systems of a clean magnetically-induced singlet d-wave superconductor [3]. The material features strong electronic hybridization between localized f-electrons and itinerant d-electrons, which leads to composite charge carriers with high mass, and strong antiferromagnetic spin fluctuations that are believed to mediate superconductivity [3,4]. $CeCoIn_5$ is believed to be close to a critical point at zero temperature that separates phases of distinctly different symmetry. This type of criticality is often also referred to as a quantum critical transition.

From an experimental perspective, it is significant that the energy of the magnetic fluctuations is relatively low, and so the material properties can be substantially tuned by using technologically available cryomagnets and pressure cells. This allows the study of the interplay between superconductivity and magnetism in a controlled way. Important insight about the pairing mechanism can be obtained by studying the electron pairing process at the onset to superconductivity. The material was cooled down to very low temperatures and magnetic fields were used to study how the magnetic properties change as the material crosses a quantum phase transition from the superconducting into a insulating phase.

The field-temperature (HT) phase diagram of the superconducting phase features two phases that are separated by a second order phase transition (see Fig. 1), indicating they are of different symmetry. It has long been suggested that this additional phase, now called Q-phase and which can only be reached with high fields, features superconducting order arising from Cooper pairs that carry a finite momentum [5].

A 15T vertical field magnet and a dilution insert was used to study a 50 mg single-crystal aligned with its reciprocal [h,h,l] plane in the horizontal scattering plane. The experiment was carried out using the cold-neutron triple-axis spectrometer RITA-II at the PSI.

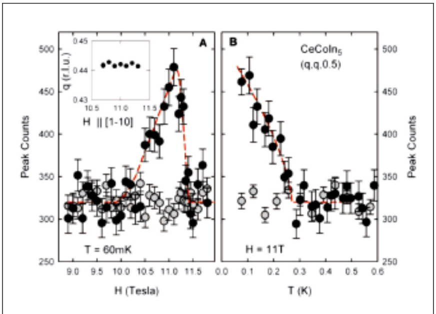

Figure 2: Peak neutron scattering intensity at the incommensurate reciprocal wave-vector (q, q, 0.5), (A) as a function of field at T = 60mK and (B) as a function of temperature at H = 11 T. The gray circles represent the background scattering. The dashed red lines indicate the temperature and field dependence of the magnetic intensity. The inset shows that the q is field-independent.

The key finding of this experiment is that the Q-phase features a long-range ordered spin-density wave which is modulated in an incommensurate manner perpendicular to the magnetic field direction [1]. The magnetic moments point perpendicular to the magnetic field and modulation vector. Most importantly, the spin-density wave is stabilized only in the superconducting phase, and it collapses abruptly when the material becomes metallic above H ~ 11.4T (see Fig. 2). This is the first example of superconductivity induced magnetic order that has been observed in nature.

The existence of magnetic order in the Q-phase came as a surprise, and its origin is currently not understood. NMR measurements found field-induced local magnetism at high magnet fields, and our results demonstrate that this fluctuating magnetism becomes static at low temperatures. However, the magnetic fluctuations in the superconducting and metallic phase must be fundamentally different, as no magnetic order is observed in the normal phase.

NEUTRON SCATTERING AT LOW TEMPERATURE AND HIGH PRESSURE

High-pressure neutron techniques lack the brilliance available in other scattering techniques, notably synchrotron radiation techniques, but in many cases add complementary results or results that are otherwise not accessible with simultaneous consideration of the required sample environment. Sensible pressure effects in solid-state systems require pressures in the several GPa range (1 GPa = 10 kbar).

Pressure directly changes atomic and molecular interactions by altering interatomic and/or intermolecular distances, and hence effectively probes the underlying potential. Experiments under high-pressure are therefore crucial benchmarks for any theoretical model as already pointed out by P. W. Bridgman, who won the Nobel Prize in 1946 for his pioneering work in high-pressure physics. Owing to a bulk modulus of a few 10 and 100 GPa, several kbar (0.1 GPa) to several GPa are needed to alter interaction distances by as little as 1 % in, e.g., molecular solids and typical oxides, respectively. For ultimate pressures, in order to keep the required forces acting on the sample tack-able, opposed-anvil techniques and small sample volumes must be used. Nota bene, diamond-anvil cells in conjunction with modern synchrotron techniques have witnessed to be a very powerful tool, where nowadays pressures in the megabar (100 GPa) range can be routinely realized on a sample of a few 10 µm3 volume. Neutron scattering techniques are currently feasible to a few 10 GPa maximum pressure due to limited brilliance of the neutron beam and hence the requirement of relatively large samples of at least a few mm3. Advantageous of all scattering techniques (X-rays, neutrons, muons) over macroscopic high-pressure techniques is their ability to probe the sample without the need of electrical or optical feedthroughs to the sample, latter often restricting the applicability of macroscopic measurements to a few GPa.

The bulk of high-pressure neutron scattering experiments is carried out using piston-cylinder type of pressure cells that are, owing to their cylindrical geometry, inherently limited by the yield strength of the cell material used. For P > 2.5 GPa this technique has to be abandoned and replaced by above-mentioned opposed-anvil cells. Throughout the last 20 years two major types of large-volume opposed-anvil cells suitable for neutron techniques have evolved, namely the Paris-Edinburgh and the Kurchatov-LLB pressure cells. With the main focus on studying ground-state properties of correlated-electron systems and corresponding need of carrying out experiments at cryogenic temperatures, opposed-anvil techniques may have been neglected in the past, despite the fact that both cell types have been demonstrated to be operational down to 4 K and 0.3 K, respectively.

At SINQ, we dispose of various cylinder-piston cells suited for elastic and inelastic neutron scattering experiments up to 1.5 GPa. For higher pressures up to 10 GPa we have commissioned and employed opposed-anvil techniques using the Paris-Edinburgh cell at various instruments and extended its use to cryogenic temperatures relevant for the study of magnetic compounds.

SUPPRESSING MAGNETIC FRUSTRATION AND MULTIFERROICITY USING PRESSURE

We now report on a single-crystal diffraction experiment using a multiferroic material and the Paris-Edinburgh cell at temperature down to T = 4 K and pressure up to P ~ 5 GPa. Multiferroic materials exhibit simultaneous magnetic and ferroelectric orders which are directly coupled. Several classes of applications have been suggested, including next-generation electronic devices in which the magnetic properties may be controlled by an electric field, magnetically-controlled ferroelectric memory devices for instant boot-up computers, or magnetically-tuned dielectric capacitor devices [6].

Until a few years ago, only a small group of materials exhibiting coupled magnetization and electrical polarization had been identified since – quite generally – the ordering of the magnetic moments and cooperative atomic displacements responsible for ferroelectricity occur at distinctly different temperatures. Recently, however, an increasing number of multiferroics have been discovered that are magnetically frustrated magnets, suggesting that competing magnetic interactions play a crucial role in these materials. It is thought that magnetic frustration naturally leaves the system with some degree of freedom at low temperatures and hence does not allow its entropy to reduce upon cooling. According to the third law of thermodynamics, however, entropy has to be zero at zero temperature, requiring a massive entropy reduction at low temperature. In multiferroics, this is achieved through the coupling to an additional order parameter – ferroelectricity – that, in the process, reduces the magnetic entropy. Ferroelectricity is thus magnetically driven.

Experimental studies probing the effects of perturbations on such complex interacting systems have often been proved to be indispensable for validating proposed theoretical models. Application of pressure is particularly powerful since, on the one hand, pressure alters atomic distances and hence directly changes the magnetic interactions between the atoms, making it thus possible to change

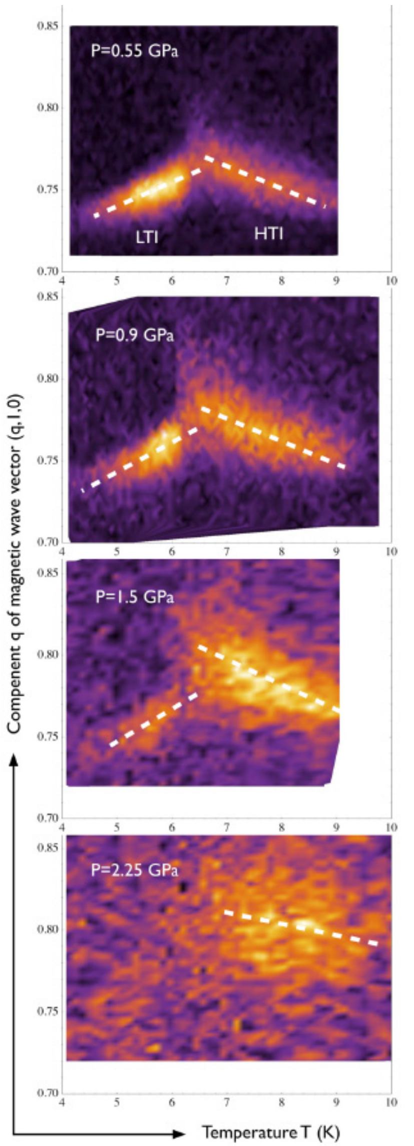

Figure 3: Density plots of the magnetic intensity at (q,1,0) as a function of 0.7 < q < 0.85 and temperature 4 K < T < 10 K. The dashed lines are a guide to the eye.

the degree of magnetic frustration in a material. On the other hand, theory may predict pressure effects relatively simply.

One of the simplest spin-spiral multiferroic materials, namely, $Ni_3V_2O_8$, has been studied, in which magnetic frustration results from the specific geometric arrangement of spins on a so-called Kagome lattice, in which the interactions between neighbouring spins compete with those between next-neighbouring spins. As a result, the compound displays a complex magnetic phase diagram, with at least three different magnetic phases. Ferroelectricity emerges in one of these phases and is magnetically driven [7,8].

Our neutron diffraction measurements on $Ni_3V_2O_8$ show that pressure removes magnetic frustration and thus suppresses ferroelectricity [9]. Opposed anvil-techniques in a pneumatically driven Paris-Edinburgh press were employed for hydrostatic pressures up to 5 GPa. The single-crystal sample was embedded in a lead matrix that served as a pressure-transmitting medium down to lowest temperatures. The ferroelectric phase (denoted LTI in Figure 3 (top)) gradually becomes suppressed by a phase with a simple commensurate magnetic structure that is typical for unfrustrated magnets and eventually disappears at pressures above 1.5 GPa. At even higher pressures (beyond 3.5 GPa) a remnant incommensurate phase at higher temperature (denoted HTI in Figure 3 (top)) is also fully suppressed, thus removing the last signs of magnetic frustration from our data.

The transition between the two incommensurate magnetic phases (denoted LTI and HTI in Figure 3) changes in nature from being continuous at ambient pressure to being discontinuous at pressures above 0.5 GPa. This feature is evidenced by the discontinuous jump of the magnetic wave-vector shown in Fig. 3. A small temperature range exhibiting phase coexistence between the two phases further hints at the first-order (discontinuous) nature of this magnetic phase transition. This clearly shows that magnetically-induced ferroelectricity can occur in a first-order transition, and might thus be switched in principle with relatively small temperature changes.

CONCLUSIONS

The availability of advanced sample environment designed for neutron scattering instruments is crucial for the advancement of basic condensed matter research. To take advantage of the full potential of cryogenic technology at user facilities, the research community is in need of well trained and professionally organized teams whose main responsibility is to tend to the needs of visiting scientists.

ACKNOWLEDGEMENTS

The authors acknowledge discussions with Nikola Egertermeyer, Simon Gerber, Christof Niedermayer, B. Padmanabhan, Jorge Gavilano, Joachim Kohlbrecher, Manfred Sigrist, Joel Mesot, Andrea Bianchi, Roman Movshovich, Eric Bauer, John Sarrao and Joe Thompson. The purchase of the dilution insert was partly financed by the Swiss National Science Foundation under contract PP002-102831. The purchase of the 15T magnet was partly financed by the Swiss National Center of

Competence in Research program Materials with Novel Electronic Properties (MaNEP).

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Swiss Participation at SNS; actively shielded 16 Tesla magnet

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ABSTRACT

The original proposal was a project of an **a**ctively **s**hielded **m**agnet (**ASM**: 16 Tesla vertical, split coil, symmetric/asymmetric mode) between the Swiss neutron users represented by the "Schweizerischen Gesellschaft für Neutronenstreuung" (SGN/SSDN) and the spallation neutron source SNS in Oak Ridge, USA. Funds were secured from the government (Staatssekretariat für Bildung und Forschung SBF), SNS, PSI and the Swiss National Science Foundation SNF via the competence center MaNEP. We have spent these funds to establish a unique facility - ASM - that has been developed by Bruker and that will be located at a unique installation - SNS: the most modern neutron source. This will combine the highest available magnetic fields with the highest possible pulsed neutron fluxes worldwide. We are convinced that the magnet based at SNS will play a world-leading role for the study of a wide range of problems at the cutting edge of condensed matter physics, which include research themes such as interplay between magnetic and electronic properties, molecular magnet or quantum phase transitions.

INTRODUCTION

The original idea of a collaboration between the Swiss neutron community and the Spallation Neutron Source SNS in Oak Ridge, USA, was triggered by a call from the Swiss Staatssekretariat für Bildung und Forschung (SBF) for international collaborative projects. For us (SGN/SSDN represented by the author and PSI represented by Joël Mesot and Kurt Clausen) it was clear that the project had to provide access of the Swiss neutron users to SNS combined with a high visibility and a challenging technological development. Different possibilities have been elaborated but only the design and construction of an actively shielded magnet - novel to neutron scattering - fulfilled all expectations. With SBF providing roughly half of the money to fund the 2 M Swiss francs project and SNS, PSI and SNF via MaNEP providing the rest, the company Bruker (market leader in actively shielded magnets for NMR) located in Fällanden, Switzerland, could start development work of this first 16 T actively shielded split coil magnet for neutron scattering.

The expectations were as follows:

a) The acquisition of a high field ASM, together with the realization of the high-flux instruments at SNS will allow the Swiss neutron users to play a world-leading role for the study of a wide range of problems at the cutting edge of condensed matter physics.
b) The realization of such a facility at SNS is timely and takes full advantage of capability of a third generation neutron source. This development, which is supported by a strong national expertise in neutron scattering, will contribute to strengthen the position of international prominence of Swiss condensed matter research. In addition, it will create a high international visibility of the commitment of the Swiss funding agencies vis-à-vis the international research community for many years to come via providing this exceptional tool.
c) Such a new type of magnet could in principle be used on any instrument at any neutron source with full magnetic field without major alterations to the instrument environment due to the very small stray fields. Hence, the market potential is high and the first company to step into this new market is very likely to occupy it totally. For the Swiss economy such a development of a new market by Bruker will set a positive signal and demonstrate the still unbroken flexibility and innovation capability in this high-tech sector.

For all these reasons, we regarded this facility as an important element for the development of Swiss and international science and technology in this very competitive field and a strategic priority for the Swiss neutron users.

REALIZATION OF THE PROJECT

When we started this project we defined three boundary conditions for a success:

a) is the planned research still topical at the time ASM is ready at SNS,
b) is SNS going to be ready for experiments at the time the magnet will be delivered,
c) will Bruker succeed to build this magnet?

We can answer all of these three questions affirmatively:

The scientific fields we originally aimed for are still topical and for an answer to many of the urging problems in condensed matter research new types of experiments are indispensable and one of these are certainly neutron scattering experiments at a third generation neutron source with high magnetic fields. SNS is busy with user experiments and on very good tracks concerning ramping up its power to the design value. Hence, Swiss users will have access to SNS as agreed in the MoU at the right time. Bruker as the expert in actively shielded magnets for NMR applications had thoroughly investigated the pro and cons for entering a new market and had finally decided to take this step. With this decision they took quite some risks, but they demonstrated with the successful delivery of this system their professionalism.

Fig. 1 shows a drawing of the magnet layout and its final realization. The magnet was tested at Bruker in Fällanden, Switzerland,

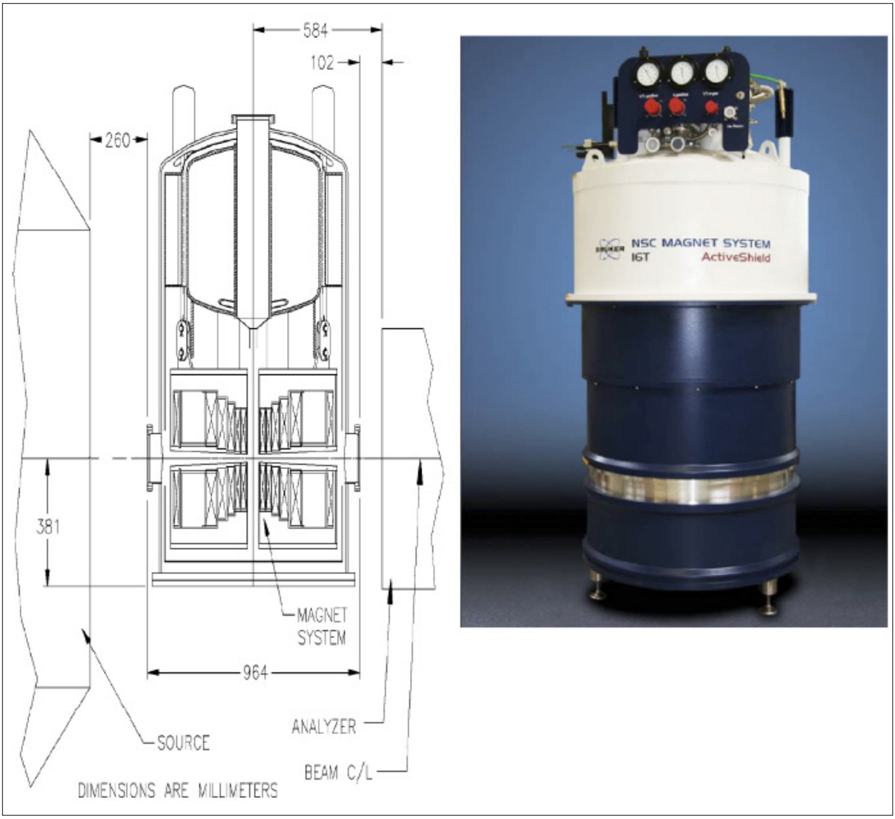


Figure 1: The initial layout of the 16-T split superconducting magnet is shown above left within the space constraints of SNS. Above right the real magnet after completion and successful 16 T test.

at magnetic fields beyond 16 T in autumn and was then delivered to SINQ at PSI to be tested for neutron transmission and depolarization. It will finally be delivered to SNS in early 2010. The present magnet can be seen as a prototype of future higher field magnets designed specifically for the environment of SNS (i.e. dedicated instrument with a magnetic field of 30 Tesla at the second target station) or other.

The measured magnet specifications are listed in Table I. A split magnet for neutron-scattering application has specific requirements, such as the size of the tapered split and a minimal aluminum support structure between the magnet halves. In addition, facilities have a unique set of constraints that must be satisfied to allow magnet installation and operation. Over an extended period of time and specifically in preparation of the original proposal, there has been an active dialogue among members of the Swiss proposers and SNS staff to establish the performance requirements of this magnet, and to identify and quantify the constraints at SNS that must be satisfied. The originally proposed program, for good reason, fell between a more ambitious examination of alternative advanced magnet configurations and a less ambitious procurement of a commercially available magnet. The constraints imposed by the facility are only met by an extension of the magnet technology beyond what is presently available.

It is not hard to imagine great interest was laid in the highest possible field. Given the difficulties in the technology of split superconducting magnets, operation at high field is already a significant requirement. In addition, the dialogue revealed a number of constraints and identified a number of additional desirable requirements.

TABLE I: ASM SYSTEM SPECIFICATION

1. Vertical-field, split-pair, actively shielded magnet
2. Separately powered magnet halves allowing symmetric or asymmetric field operation
3. Passive protection system
4. Persistent switch in each magnet circuit
5. Symmetric central field: 16.0 T
6. Asymmetric central field: 14.0 T
7. Symmetric field uniformity < 0.4 % in 10 mm diameter spherical volume
8. Asymmetric field uniformity < 0.8 % in 10 mm diameter spherical volume
9. Radial fringe field < 50mG @ 4.5m @ 16T
10. VTI bore diameter = 34.5 mm
11. Split at magnet axis = 12 mm
12. Split conical angle = +/– 4 deg
13. Open access along beam line (Cd-tunnel), not including outer window = 14 x 13 mm^2
14. Neutron access in horizontal plane = 330 deg
15. Cryostat outer diameter = 978 mm
16. System weight (filled) = 2.1 metric tons
17. Field stability in persistent mode = 1.4×10^{-4}/hr
18. Flipping ratio on TASP (SINQ) without magnet: 14. With magnet @ 1 T : 13
19. Integrated radial thickness of aluminum ring in split = 76.5 mm
20. Allowed cryostat tilt = 2 deg

ACTIVE SHIELDING

A particular constraint recognized at the outset for the operation of any new high field magnet is the proximity of the magnetic material of the source and instrument shielding. Large transverse magnetic forces are not only difficult for the constraint of the magnet within the cryostat, but in addition the potential is real for significant degradation of magnet performance due to coil motion as a result of these environmental magnetic forces. Additional magnetic material might be present at different instruments in the lower supporting structure on the sample stage upon which the magnet is typically placed.

In addition, out of the dialogue regarding magnet performance and operation requirements came an appreciation for the importance of minimizing the stray field for the placement and operation of instrumentation near, and not so near, the magnet. The absolute field value and, sometimes more importantly, the changes in field values, that can be tolerated at various instrument sites are very low, on the order of the earth's field or sometimes even less. The discussions of magnet requirements included a description of the efforts made presently to compensate the dipole-moment field during magnet operation.

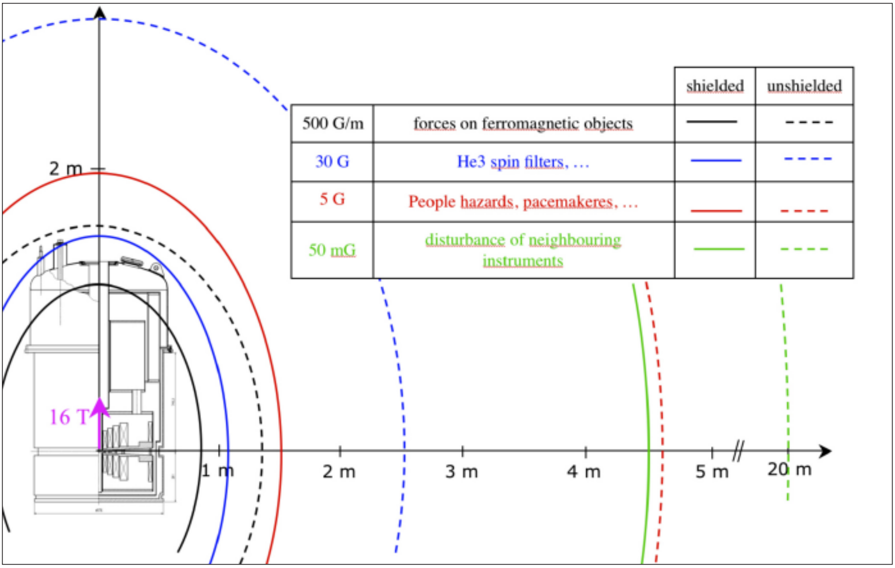


Figure 2: Calculated magnetic stray field for 16T that was confirmed experimentally.

A compelling solution to the constraints imposed is the use of a shielded superconducting magnet. The only practical configuration for a shielded magnet in the present application is an actively shielded magnet with superconducting shield coils as an integral part of the magnet assembly.

The active, superconducting shield coil is another split magnet mechanically connected to the main magnet in the cold space and operated electrically in series but in magnetic-field opposition. The principle is to provide a coil with a dipole moment opposite to the main coil. The shield coil is placed at an increased radius to provide as much moment from an increase in area as opposed to increased ampere-turns. Consequences of the shield coil are reduced central field, for the same main coil, and generally a larger magnet and cryostat, especially in the radial direction. Given the spatial constraints (a maximum diameter of less than 1 m at SNS) a maximum central field specification of 16 T was set, based on a detailed examination of magnet size vs. performance. The design of a shielded magnet did entail, beyond the usual magnet-design considerations, detailed structural analysis of the supporting structure for the shield coil and design for stiffness while controlling the associated cold mass.

ADJUSTABLE ASYMMETRIC OPERATION

A primary requirement of the magnet is that it be used with polarized neutrons, and therefore that a field null be avoided, especially in the incident beam path but also in the diffraction plane. Magnets with asymmetric windings have been used historically to move

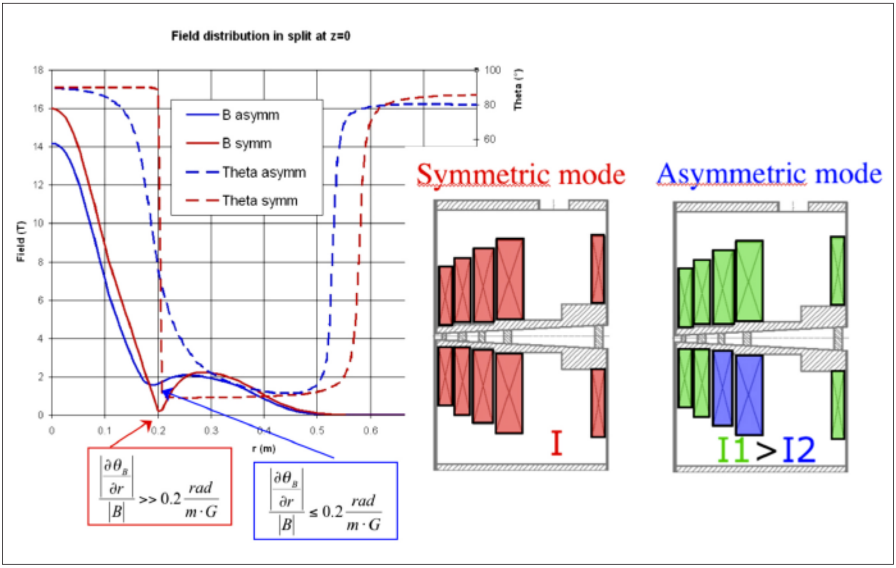


Figure 3: Calculated magnetic field profile in symmetric and asymmetric mode.

the field null out of the beam path into the magnet structure (Fig. 3). For the same central field, an asymmetric magnet makes achievement of high field somewhat more difficult in that the peak field is raised on the higher field coil. In discussion of magnet requirements leading to the specification of the present magnet, the idea was expressed that forces and stresses in the magnet are also increased for asymmetric magnets. Indeed, for the same central field, the stress in the windings of the higher field coils is increased somewhat over that for symmetric operation, but both the increase in peak field and winding stress is modest. The axial stress in the coils and the force on the mid-plane structure is actually decreased slightly in asymmetric operation for the same central field.

It was proposed and realized to provide a magnet that is mechanically symmetric in construction and that provides an adjustable asymmetric field by means of independently energizing the two halves of the split magnet. The coils in the two halves will be identical in mirror fashion. The circuit provides for maximum flexibility in the adjustment of the field. When the magnet halves are operated identically, the field is symmetric; Non-symmetric supplies results in an asymmetric field. The active shield coil for each half are connected in series with the corresponding main coils so that the active shielding is preserved at all levels and combinations of currents in the coils.

Calculation methods and the corresponding software for detailed analysis of the spin transport through the magnet system have been developed at SNS that assisted in the setting and operation of the magnetic null point. In December 2009 the spin transport of neutrons traveling through the magnet at an asymmetric field of 2 T has been measured on TASP (see Fig. 4) and compared to the value without the magnet but with a perfect guide field at the sample space. The result was a small decrease of the flipping ratio from 15 to 14 with the magnet installed.

GENERAL SYSTEM DESCRIPTION

Other aspects of the magnet specification are indicated in Table I. The bore diameter in the VTI is seen as a compromise, allowing space for a dilution refrigerator while keeping the bore, magnet size, and the net dipole moment of this initially shielded magnet relatively low. The split height and divergence angle have been adjusted towards larger divergence angle on cost of the split height.
The cryostat has a liquid-nitrogen shield and the magnet is cooled by liquid helium. The magnet has persistent mode capability. To reduce helium boil off in persistent mode the magnet system incorporates low-loss HTS current leads. The magnet system was designed to allow a degree of external load from interaction with external magnetic material, and for 2 degree tilting. The magnet system was also designed for cold transportation with zero-field between instruments at SNS.

The system is equipped with all the electronic components required for operation including main power supplies, persistent-switch supplies, helium-level indicator, temperature sensors at critical cryostat locations, a rotation stage for the sample stick (supplied by PSI) and a field reversal option (funded by SNS).

System tests and first commissioning have been done at Bruker in autumn and at SINQ in December 2009, respectively, before shipment to the US in early 2010. The ASM magnet will be available at SNS for routine user operation in the first half of 2010 and we are looking forward to the first successful experiment and a smooth operation thereafter hopefully we many Swiss users.

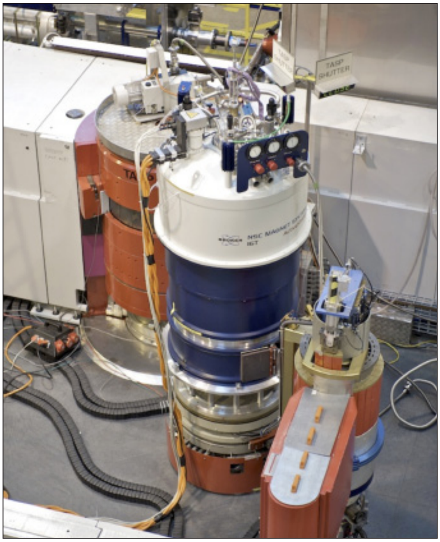


Figure 4: Magnet test in asymmetric mode with polarized neutrons on TASP (SINQ).

ACKNOWLEDGMENT

The successful realization of this magnet depended on the good will and the engagement of many people: First of all of Paul Zinsli and Martin Steinacher at SBF, the Forschungskommission and the direction of PSI, Ian Anderson and the whole SNS team, Øystein Fischer and MaNEP, Raffaele Gilardi and the whole Bruker team and direction.

First Joint User Meeting at PSI, JUM@P '09

S. Janssen
Paul Scherrer Institut, User Office, NUM department

PSI director Joël F. Mesot.

The new head of the Laboratory for Neutron Scattering PSI & ETHZ, Andrey Zheludev.

Christian Bernhard, University of Fribourg.

The Paul Scherrer Institut near Villigen in Switzerland is still – apart from the DIAMOND/ISIS campus in the UK – the only place worldwide, where the three major probes for condensed matter research, chemistry or materials sciences (synchrotron X-rays, neutrons and muons) are offered on a single site.

On October 12–13, 2009 for the very first time a joint user meeting of the three major user facilities at the Paul Scherrer Institut, namely the Swiss Light Source (SLS), the Swiss Spallation Neutron Source (SINQ) and the Swiss Muon Source (SμS) was organized.

The PSI Joint Users' Meeting, called JUM@P '09 was organized by PSI and its Users' Association 'JUSAP'. The meeting aimed at bringing together the three user communities and to generate new synergies among the scientists driven by common scientific rather than technical interests.

Not only the scope of the meeting was new, there was also a novel approach to settle the scientific program. The organizers proposed certain scientific symposia and let the user community vote on those. Driven by this result certain workshops were then selected by the organizing committee.

Mathias Kläui, University of Konstance.

Jens Preben Morth, University of Aarhus.

Stefan Klotz, University P&M Curie, Paris.

The 1.5 days meeting started with a plenary session on day one. First welcome addresses and information about PSI and the user facilities were given by the PSI director Joël Mesot, the head of the PSI department for 'Synchrotron Radiation and Nanotechnology' J. Friso van der Veen and the new head of the 'Laboratory for Neutron Scattering' Andrey Zheludev.

Florian Piegsa, ILL Grenoble (left) receives the first PSI Thesis Medal from J. Friso van der Veen (SLS, PSI), the chairman of the selection committee.

The scientific program then started with three invited talks given by Christian Bernhard (Fribourg, CH), Mathias Kläui (Konstanz, DE) and Jens Preben Morth (Aarhus, DK), respectively.

After the coffee break the program continued with the keynote presentation on the fascinating physics of 'Water and ice under high pressure' by Stephan Klotz (Paris, FR). All scientific presentations during the plenary session were given on a level that was well suited for non-experts and provided a good overview about the variety of science done at the PSI user facilities.

Bernd Schönfeld (Zürich, CH) then introduced the new 'Joint Users Association at PSI, JUSAP' in his function as its chairman and proposed to refresh the electronic feedback questionnaires of the experiments at PSI, which meanwhile has been realized.

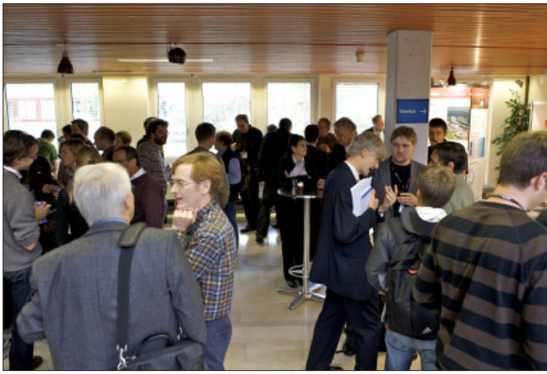
Finally, the PSI thesis medal was awarded for the first time. The prize will be awarded every two years for an outstanding PhD thesis that contains significant results obtained at one or more of the PSI user facilities and consists of a medal, a certificate and a prize money of CHF 5.000,- This year the prize was awarded to Florian Piegsa (ILL Grenoble, FR) for his work on 'Neutron spin precession in samples of polarized nuclei and neutron spin phase imaging'.

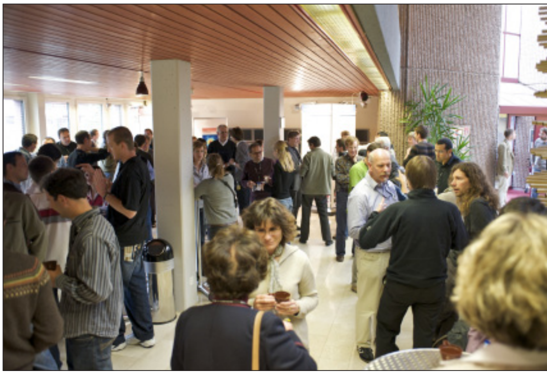
The second day of the meeting was devoted to more specialized parallel workshops as they were chosen by the user community in advance. The topics were:

- Colloids and soft condensed matter
- Correlated electron systems
- Materials for environment and energy
- Imaging of biological and technical materials
- Advanced techniques at PSI large facilities
- From gene to structure: impact of automation technologies

Two poster sessions, a conference dinner and visists of the PSI facilities completed the meeting. The scientific program is still online and can be looked at here: http://user.web.psi.ch/jump09

JUM@P '09 was attended by more than 200 people from the three user communities. 51 talks and almost 100 posters were presented. After this successful start of the JUM@P series it is envisaged to establish this new format of the PSI user meetings every two years.





Impressions during the coffee breaks.

8th PSI Summer School on Condensed Matter Research Functional Materials

S. Mueller and C. Quitmann
Swiss Light Source, Paul Scherrer Institut, Switzerland

This PSI Summer School has been established to provide education for Ph.D. students and postdoctoral fellows working in condensed matter physics, materials science and related fields. The goal is to enable students to work at the frontiers of science and technology by providing expert training not easily available within the traditional system of graduate education and postdoctoral programs. The School, which is supported by the European Commission under the 7th Framework Program, meets annually during August in Zuoz, Switzerland. This year, it was the first time that the School run a twofold educational program with the traditional school at the Lyceum Alpinum in Zuoz (01– 07 August) followed by a practical training for some of the participants at the PSI facilities (8–10 August) in Villigen, Switzerland.

The overall theme of this eighth school was "Functional Materials". The morning sessions always started with introductory lectures such as machine physics for accelerators as well as the techniques to studying "functional materials": microscopy, spectroscopy, tomography, powder and surface diffraction and many others. The practical implementation of the theories was tackled in tutorial sessions by experts from key areas like energy storage and conversion systems, biology and chemical catalysis, including industrial applications. The school ended with an introduction into XFEL (X-ray Free Electron Laser) machine technology and important scientific cases waiting for the great opportunities provided by these machines in the near future. The complete program and pdf-versions of all presentations are available on: https://school.web.psi.ch/html/information_programme.shtml

The students also presented their own scientific activities in a dedicated poster session; this provided ample opportunity for discussions and making new contacts.

The School brought together 96 participants of 14 different nationalities, affiliated to Swiss (66), EU (27) and other laboratories (3); 20 students were selected for the practical training sessions at PSI. Each student performed two out of seven prepared neutron, photon or muon experiments. In a final round-table discussion each experiment was presented and discussed among the students and their supervisors. The training program is available on: https://school.web.psi.ch/html/programme_practical_training.shtml.

During the free afternoons the participants could choose between various activities such as excursions to the nearby 'National Park', mountain hiking or biking tours or playing tennis on the traditional courts of the Lyceum. Those who were brave enough could even show their ability in 'River Rafting'.

We thank the school secretary Mrs. Daniela Jahns for the perfect organization and support before, during, and after the school. Financial support by the EU I3 Integrated Infrastructure Initiative NMI3/Networking is gratefully acknowledged.

Minutes of the SGN/SSDN General Assembly on 13/10/2009

Date/Locality:	October 13, 2009, Paul Scherrer Institut, main lecture hall
Begin:	17:45
End:	18:30
Participants:	19 members of the society, 4 non-members in non-voting capacity

1. WELCOME

The president of the SGN/SSDN, Peter Allenspach welcomes the participants to the general assembly 2009. In particular, he welcomes the two honorary members Prof. Walter Hälg and Prof. Albert Furrer.

2. MINUTES OF THE GENERAL ASSEMBLY 2008

The minutes of the general assembly of the SGN/SSDN from 28/11/2008 published in Swiss Neutron News #34 (December 2008) are accepted without objections.

3. ANNUAL REPORT OF THE CHAIRMAN

P. Allenspach reports on the activities of the SGN/SSDN in the year 2009:

a) An 'apero' was again sponsored by the Society at the PSI Summer School in Zuoz, August 1-10, 2009 (Functional Materials).
b) Two new issues of Swiss Neutron News will appear in 2009 (December issue in preparation).
c) Actually the SGN/SSDN has 199 members, two more than in 2008.
d) The project of the 16T Swiss magnet for SNS is going well and in time. Successful tests were made with 16T symmetric and 14T asymmetric fields. Tests with neutrons at SINQ are scheduled for December 09.
e) In a short review over the past six years P. Allenspach explains that the activities around ESS took many resources from the SGN board and particular SGN activities had to be reduced. On the other hand a new era will start with the election of a new board (see topic 11), which definitely will result in new dedicated SGN activities.

4. REPORT OF THE TREASURER

S. Janssen presents the annual balance sheet 2008:

Assets SGN/SSDN on 1.1.2008: **CHF 3.985,91**

	Revenues [CHF]	Expenses [CHF]
Membership-fees (cash box)	190,–	
Membership-fees (postal check acc.)	680,–	
Donations (cash box)	5,–	
Total expenses		709,50
– Apéro Zuoz (2008)		667,50
– Expenses PC account		42,-
Credit for accrued interest	1,70	
Total	876,70	709,50
Net earnings 2008:	**CHF + 167,20**	
Assets SGN/SSDN on 31.12.2008:	**CHF 4.153,11**	

Balance sheet 2008:

	Assets [CHF]	Liabilities [CHF]
Postal check account	2.064,61	
Cash box	2.088,50	
Assets on 31.12.2008	**4.153,11**	

5. REPORT OF THE AUDITORS

Bericht der Revisoren

Die Rechnungsrevisoren haben die Belege, die Abrechnungen und die Bilanz für das Jahr 2008 geprüft und für in Ordnung befunden!

9.2.09		29.01.09	
Datum	Dr. M. Zolliker, PSI	Datum	Dr. K. Krämer, Uni Bern

Both Auditors (K. Krämer, M. Zolliker) have examined the bookkeeping and the balance 2008. They accepted it without any objections. The participants therefore unanimously vote for a release of the SGN/SSDN board.

6. BUDGET 2010

The treasurer presents the following proposal for the budget 2010:

	Receipts [CHF]	Expenditures [CHF]
member fees	600,–	
interests	5,–	
fees PC account		40,–
Zuoz Apero 2010		700,–
Total	605,–	740,–
balance 2010	**– 135,–**	

The participants accept the budget proposals unanimously.

7. NEWS FROM ENSA (P. ALLENSPACH)

a) In a recent ENSA meeting in Munich M. Steiner (Berlin) was elected as new ENSA chairman to follow Peter Allenspach. J. Campo was elected as vice-chairman and K. Knudsen as new secretary.

b) The next European Conference on Neutron Scattering (ECNS) will be organized in Prague from July 17–21, 2011.

c) Also the next International Conference on Neutron Scattering (ICNS) will take place in Europe: July 7–11, 2013 in Edinburgh.

d) P. Allenspach reviews that the activities around ESS were the major ENSA activities during the last years. Now – after the ESS site decision – a new phase of treating the ESS will start. The users will have to define their positions and strategies towards the ESS and the national societies like the SGN will have to support the Swiss users in doing so.

8. NEWS FROM ESS AND THE ESS-PP PROJECT

Axel Steuwer from the ESS Scandinavia secretariate updates the assembly on recent news from ESS:

a) On May 28, 2009 the Competitiveness Council voted on the three site contenders of the ESS. The result was in favour of Lund in Sweden (7 votes) over Bilbao, Spain (2 votes) and Debrecen, Hungary (0 votes). That result is still not formally confirmed but in principle equivalent to an ESS site decision for Lund.
b) He then recalls briefly the ESS reference design, which foresees:
   1. 5mA proton accelerator at 1.0 GeV
   2. Pulses of 2 ms with a frequency of 16.6 Hz
   3. Liquid target material: mercury or lead/bismuth (not decided yet)
   4. 22 instruments, upgradeable to 33
   5. 450 members of staff
   6. Capital cost (Jan 2008): 1.377 M€ + 101 M€ site specific cost
   7. Operationg cost: 89 M€ per year
   8. Decommissioning cost: 344 M€
   9. First neutrons: 2018
c) Both Sweden and Denmark will act as co-hosts of the ESS. Spain has signed in as partner in June 2009. The two hosts countries and the countries from the Nordic-Baltic partnership will cover 50% of the construction costs, whereas the remaining 50% will be funded by Spain, France, Germany, Italy and Switzerland.
d) On October 22–23, 2009 the first ESS Steering Committee will be organized. Switzerland will be represented by Kurt N. Clausen from PSI and Martin Steinacher from the Swiss State Secretariate.
e) The following timing for the various project phases are envisaged:
   1. Pre-construction phase: 2010–2012
   2. Construction phase: 2013–2018
   3. Completion phase: 2019–2025
   4. Operations phase: 2026–2066
   5. Decommissioning phase: 2067–2071
f) For the next time (2010 – 2012) the folowing major goals will have to be realized:
   1. Appoint a project leader
   2. Appoint Technical Advisory Bodies (accelerator systems, target & moderator assembly, beamlines, instruments & science)
   3. Integration of the European partners
   4. Build up staff expertise at ESS
   5. Critically review the design (agree on specifications, iterative costing exercise, design for procurement)

Peter Allenspach then adds some informations regardig the ESS Preparatory Phase (PP) project: the Swiss State Secretariate for Education and Research announced the general willingness to cover 3–4% of construction and operation costs, since in the medium term the

ESS will be THE international source supported by Switzerland. To further support this possible engagement the SGN should make a clear statement towards the SER regarding the use and the need of ESS for the Swiss neutron community. This will be one of the first important tasks of the new board (see topic 11).

Furthermore it was decided that the ESS-PP project will not be pronlonged. Thus the project ends in March 2010 as originally planned.

9. NEWS FROM THE INSTITUT LAUE LANGEVIN ILL

Kurt N. Clausen – the Swiss representative in the ILL Scientific Council – was hindered from attending the general assembly but provided Peter Allenspach with some information about news from the Institut Laue Langevin and the last Council meeting on April 23-24, 2009:

a) The ILL reactor operated safe and reliable during the last year and the phase 0 Millennium upgrade program M0 has resulted in an impressive overall increase of efficiency by a factor of 17.
b) Denmark and Slovakia will join ILL in 2009 – but Poland may not be able to afford to be a member from 2009, the Russian membership is still an open question.
c) 676 proposals were submitted for the last round – overbooking by approx a factor of 2. The field of physics covered 40%, soft matter, chemistry, Bio and materials each 10-20%, 15% of the beamtime was used by ILL scientists, 5% beam time was lost.
d) After the national balancing Switzerland was awarded 4.2% of the beamtime or 173 days (the financial contribution of Switzerland remained constant at 3.5%). Hence the Swiss proposers were again very successful in that proposals round.
e) The M1 phase of the Millennium upgrade program (2008 – 2014) suffers from budget problems. Main reasons for that are the missing Russian contributions (totally 16.2 M€between 2008-14) and the danger to loose another 4.2 M€ if Poland decides to leave ILL.
f) The strategy and and plans beyond 2014 are not very well defined yet but the Scientific Council states that the 'vitality of the ILL in this neutron landscape beyond 2014 depends on a vigorous upgrade program'. It seems 'more important to run fewer but top rated and unique instruments than running many'.
g) The next meeting of the ILL Scientific Council will take place on November 19-20, 2009. At this meeting more concrete ideas about the ILL visions and strategy will be discussed.
h) Any comments and suggestions regarding the ILL should be addressed directly to Kurt N. Clausen, PSI.

10. SGN/SSDN ACTIVITIES 2010

P. Allenspach states that one activity in 2010 will be the commissioning of the 16T SNS magnet. Again a welcome reception during the Zuoz summer school will be sponsored, which is always appreciated by both the organizers and the participants.

It is also clear that it will be the task of the new SGN board to initiate new activities and to identify the SGN profile for the time to come.

11. ELECTIONS

All present board members - Peter Allenspach (chairman since 2004), Silvio Decurtins (board member since 1998) and Bernd Schönfeld (board member since 2004) - as well as the secretary (Stefan Janssen, since 2000) announced well in advance of the general assembly that they wish to step back from their duties such that a complete new board will have to be elected this time.

Peter Allenspach warmly thanks in the name of the SGN members all leaving board members and the secretary for their engagement over the last years.

Prior to the general assembly new candidates for the board were contacted and identified.

Those are:

- Henrik Ronnow (EPF Lausanne), proposed to candidate as chairman
- Anna Stradner (Uni Fribourg and AMI Fribourg), proposed to candidate as board member
- Michel Kenzelmann (PSI, NUM department), proposed to candidate as board member
- Urs Gasser (PSI and Uni Fribourg), proposed to candidate as secretary

Peter Allenspach points out that the affiliation of the SGN chairman from the very beginning was always alternating between PSI and a Swiss university. This is not a written law but would be fulfilled with the present proposal for the new chairman.

The secretary was always affiliated at PSI (so far Peter Böni, Stefan Janssen) to ease the administrative procedures with printing the 'Swiss Neutron News' or the distribution of news via the PSI/SINQ mailing lists.

Peter Allenspach then adresses each single board function and asks if there are additional proposals for candidates. This is not the case. Afterwards the general assembly elects each board member and the secretary individually. Each of the four elections is unanimously and without abstentions.

Therefore the new SGN board from October 2009 on consists of:

- Henrik Ronnow, chairman
- Anna Stradner, board member
- Michel Kenzelmann, board member
- Urs Gasser, secretary

The former president and the present SGN members cordially congratulate the new board members.

Finally, the assembly has to elect the successor of the leaving ENSA delegate Peter Allenspach. He proposes as a candidate the new chairman – Henrik Ronnow. There is no other candidate and the assembly also elects Henrik Ronnow unanimously and without abstentions as the new Swiss ENSA delegate.

Finally the new chairman thanks Peter Allenspach for his important and efficient work for the Swiss Neutron Scattering Society over the last years.

12. MISCELLANEOUS

No issue!

S. Janssen
October 2009

Announcements

SGN/SSDN MEMBERS

The Swiss Neutron Scattering Society welcomes the following new member:
Anders Kaestner, Paul Scherrer Institut, Switzerland.

Presently the SGN has 200 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 still 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.

PERSONAL

After 9 years of being secretary of our society and after editing 18 issues of 'Swiss Neutron News' I hand over this task to our new secretary Urs Gasser. It was always a pleasure fo me to work for the Swiss Neutron Scattering Society and I wish Urs and the new SGN board to take the same delight in this task. Let me also take the opportunity to thank all the contributors and authors of 'Swiss Neutron News' for supporting us with many good and interesting articles and reports over the last years.

Stefan Janssen

PSI FACILITY NEWS

PSI 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://user.web.psi.ch/newsletter.

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, 2010.**

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

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PSI PAUL SCHERRER INSTITUT
9th
PSI Summer School 2010
Magnetic Phenomena
Lectures:
August 7–13, 2010
Lyceum Alpinum, Zuoz, Switzerland
Practical Training:
August 14–16, 2010
Paul Scherrer Institut
Villigen, Switzerland
Scope
Magnetic phenomena are not only fascinating research topics, but also of key importance to a modern society. Magnetic phenomena and the understanding of these are basis for technologies with applications in information technology, energy conversion, diagnostics, sensors and actuators etc.
The school will introduce magnetism and strongly correlated electron systems and show how large scale facilities providing beams of photons, muons, and neutrons are used to study magnetic phenomena.
It is the second time that the PSI Summer School offers a twofold educational program with the traditional school in Zuoz followed by hands on training at the PSI Facilities in Villigen.
Organizers
K. N. Clausen (chair); R. Abela, G. Frei, S. Janssen, M. Kenzelmann, E. Morenzoni, C. Mudry, S. Müller, C. Quitmann, J. F. van der Veen, A. Zheludev, R. Bercher (secretary)
Invited speakers
External experts:
R. Allenspach, IBM Rüschlikon, CH; S. Blundell, Oxford University, UK; S. Bramwell, LCN, UK; S. Dudarev, UKAEA, UK; P. Gambardella, ICN, ES; P. Hedegård, University of Copenhagen, DK; H. von Löhneysen, KIT, DE; M. Kläui, Universität Konstanz, DE; S. Picozzi, INFM, IT; N. Shannon, University of Bristol, UK; M. Sigrist, ETHZ, CH; J. Valles, Brown University, US; H. Zabel, RUB, DE
PSI experts:
A. Fraile-Rodriguez, S. Gvasaliya, M. Kenzelmann, H. Luetkens, Z. Salman, T. Schmitt, M. Shi, J. Stahn, O. Zaharko, A. Zheludev (ETHZ/PSI)
Registration: http://school.web.psi.ch
Contact: renate.bercher@psi.ch (school secretary)
Deadlines: Early registration: 30 April, 2010
Regular registration: 15 June, 2010

Conferences and Workshops 2010

(an updated list with online links can be found here: http://sinq.web.psi.ch/sinq/links.html)

JANUARY

- HAXPES 2010: Workshop on Hard X-ray Photo Emission Spectroscopy
  January 18–19, 2010, Synchrotron Soleil, Gif-sur-Yvette, France

- 5th SOLEIL Users Meeting
  January 20–21, 2010, Synchrotron Soleil, Gif-sur-Yvette, France

- VULCAN at the SNS: Scientific Opportunities, Industrial Applications, and Challenges
  January 21–22, 2010, Oak Ridge, TN, USA

- Flipper 2010: International Workshop on Single-Crystal Diffraction with Polarised Neutrons
  January 26–30, 2010, Grenoble, France

- 4th European XFEL Users' Meeting
  January 27–29, 2010, Hamburg, Germany

FEBRUARY

- The meetings of Biology and Synchrotron Radiation (BSR) and Medical Applications of Synchrotron Radiation (MASR)
  February 16–18, 2010, Melbourne, Australia

- 25th Workshop on Novel Materials and Superconductors: Computers in Material Sciences
  February 20–27, 2010, Planneralm, Austria

- HERCULES 2010: 20th session
  February 21 – March 27, 2010, Grenoble, France

- SNI 2010: Deutsche Tagung für Forschung mit Synchrotronstrahlung, Neutronen und Ionenstrahlen an Grossgeräten
  February 24–26, 2010, Berlin, Germany

MARCH

- 4th International Workshop on Dynamics in Confinement
  March 3–5, 2010, Grenoble, France

- ICANS-XIX: The 19 th Meeting of the International Collaboration on Advanced Neutron Sources
  March 8–12, 2010, Grindelwald, Switzerland

- 31st Berlin School on Neutron Scattering
  March 11–19, 2010, Berlin, Germany

- NOP 2010: International Workshop on Neutron Optics
  March 17–19, 2010, Alpe d'Huez, France

- HERCULES XX: HERCULES Symposium
  March 25–26, 2010, Grenoble, France

- Fourth Seeheim Conference on Magnetism
  March 28 – April 1, 2010, Frankfurt, Germany

APRIL

- MRS Symposium W: Diagnostics and Characterization of Energy Materials with Synchrotron and Neutron Radiation
  April 5-9, 2010, San Francisco, USA

- E2C-2010: European Energy Conference
  April 19-23, 2010, Barcelona, Spain

MAY

- MaMaSELF 2010: 3rd Annual Status Meeting
  May 3-6, 2010, Rigi Kulm, Switzerland

- NMI3 General Meeting 2010
  May 19-21, 2010, Barcelona, Spain

- SNS 2010: 9th International Conference on Spectroscopies in Novel Superconductors
  May 23-28, 2010, Shanghai, China

- ICCS 2010: Tenth International Conference on Computational Science
  May 31 – June 2, 2010, Amsterdam, The Netherlands

JUNE

- RCBJSF-10: The 10th Russia/CIS/Baltic/Japan Symposium on Ferroelectricity
  June 20-25, 2010, Yokohama, Japan

- 1st International Workshop: The New Generation in Strongly Correlated Electron Systems
  June 20-26, 2010, Playa Blanca, Lanzarote, Canary Islands, Spain

JULY

- International Soft Matter Conference 2010
  July 5-8, 2010, Granada, Spain

- PNCMI 2010: 8th International Workshop on Polarised Neutrons in Condensed Matter Investigations
  July 5-8, 2010, Delft, The Netherlands

- LEES 2010: Low Energy Electrodynamics in Solids
  July 5-10, 2010, Les Diablerets, Switzerland

- 43rd IUPAC World Polymer Congress 'Macro2010'
  July 11 – 16 July, Glasgow, UK

- Eleventh International Conference on Surface X-ray and Neutron Scattering
  July 13-17, 2010, Nortwestern University, IL, USA

- SXNS11: Eleventh International Conference on Surface X-ray and Neutron Scattering
  July 14-17, 2010, Chicago, USA

AUGUST

- PRICM – 07: 7th Pacific Rim International Conference on Advanced Materials and Processing
  August 1-5, 2010, Cairns, Australia

- 9th PSI Summer School on Condensed Matter Physics: Magnetic Phenomena
  August 8–15, 2010, Zuoz, Switzerland

- XXth International Symposium on the Jahn-Teller Effect
  August 17–20, 2010, Fribourg, Switzerland

SEPTEMBER

- 7th International Conference on Inorganic Materials
  September 12–14, 2010, Biarritz, France

- 3rd ILL Millennium Symposium and European Users Meeting
  September 15–17, 2010, Grenoble, France

OCTOBER

WCNR-9: 9th World Congress on Neutron Radiography
October 3–8, 2010, Kwa-Maritane, South Africa

Swiss Neutron Scattering Society
Sekretariat SGN/SSDN
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WLGA/018
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