



ESF Workshop

Highly Frustrated Magnetism

Organization :

C. Lacroix & P. Mendels

Program

S. Bramwell, A. Keren & F. Mila

La Londe les Maures

7-9 November 2005



WORKSHOP in LA LONDE LES MAURES

(7-9 Nov 2005)

Review and opening meeting of the " Highly Frustrated Magnetism" ESF program

SUMMARY

The Lalonde workshop (2.5 days) gathered 102 participants from 15 countries. Young post-docs and PhD students represented more than one third of the audience. It was the **kick-off meeting of our ESF program "Highly Frustrated Magnetism"** intended to make significant and original european contributions in the field of Highly Frustrated Magnetism and stimulate new collaborations between solid-state chemists, experimental and theoretical physicists, beyond existing ones.

Besides the scientific part which dominated the meeting, the aim and objectives as well as the possible actions within our programme were presented in detail, so as to stimulate an active enrolment of the participants in the network.

General introductory talks were given for each selected topic, High field, pyrochlores, kagomé, orbital degeneracy, low-dimensional, triangular, two-dimensional. Recent results covering the activities of the various groups participating the program were reviewed as well as to-date open problems, emerging new theoretical concepts, synthesis approaches which are all obviously at the heart of our objectives and future progress in the field.

The objectives of the meeting were reached, ie gathering a sizeable fraction of the european researchers in the field of frustrated magnetism, covering most of the institutes/research teams and spreading the information about our network in a friendly atmosphere and a high international level of science.

In addition, the second steering committee was held and future workshops were at the center of our debates.

AIM AND ORGANIZATION OF THE WORKSHOP

This workshop which title is the name of our network "Highly Frustrated Magnetism" was the first of the series which will be organized within the programme. The decision of such a workshop had been made at the steering committee held in Strasbourg on 18 May 2005. This features the public start of our network and was organized by the two central promoters of the proposal, C. Lacroix and P. Mendels. Beyond this symbolic issue, the central idea behind it was to advertise for the activities of the network, present most recent European (and worldwide) results and initiate novel collaborations beyond existing ones.

The early date which proved to be quite challenging was chosen so as to be as soon as possible after the first steering committee, taking into account the summer break, allowing time for publicizing the network and subsequently the workshop, the registration, submission of abstracts, production of an abstract booklet...

Our guidelines were to gather a maximum of participants, give to at least one representative per institute/research group the opportunity to present a short summary of the activities in his institute/group and also have an overview about strong impact recent results in the field of highly frustrated magnetism. These ambitious goals have led to favour a format of the workshop with a large number of concise oral presentations (15') with 6 review talks in the various fields of activities (30'). Also, the format of 2.5 "heavy" days seemed to be quite adequate since, at such a stage of the term, teaching staff cannot leave their university for more. In order not to exclude any potential participant and event to attract more people to our field, accomodation and conference costs were covered for all participants (including non-participating countries), deadlines were (unofficially) fairly flexible and travel expenses partially supported for all participants from participating countries.

The workshop place was finally decided in June to be a France-Telecom resort in La Londe les Maures, which featured several important criteria:

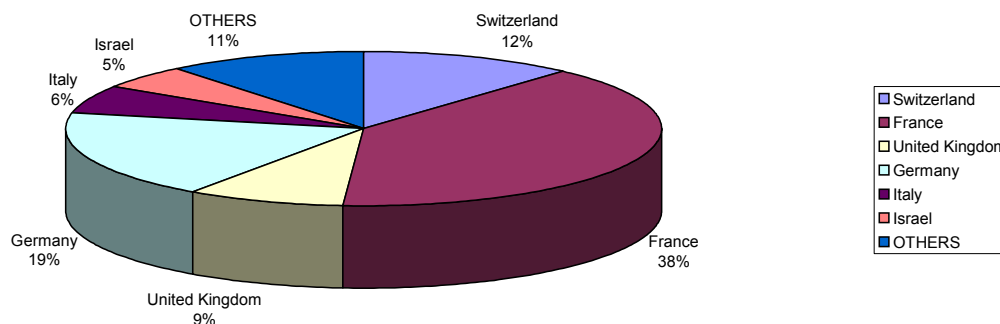
- cheap accomodation (ca 80 euros/day/participant including everything, accomodation, meals, coffee break, conference room..., even cheaper for PhD students who were booked in double rooms)
- participants accomodated in a close area
- availability of a conference room with a poster room open during the whole meeting and located in the hall outside of the conference room .
- pleasant surroundings (french riviera, coast accessible through a 10 minutes walk)

The absence of easy access to Internet, a weak point of this conference center proved to have a very positive impact as it allowed a reinforced communication between participants in a warmful atmosphere.

PARTICIPANTS

For practical considerations, a "light" preregistration was organized (deadline: 15 sept.) which was followed by an on-line registration stage (deadline: 5 oct, including abstracts), the programme committee's statement (19 oct) and individual e-mails to the participants about their communication in addition to web-posting of the program. Only 7 participants did not wish to communicate because they had a colleague presenting common work, other than that, all the proposed communications were accepted either through a poster or an oral presentation.

The various steps of registration allowed to probe the strength of the field. Among 109 preregistration from 16 countries, 93 were confirmed, 9 new participants were registered at the final stage. The final number of participants was 102 from institutes spreading over 15 countries. Note that this exceeded our initial estimate of 80 participants. Only one participant (J. Gardner, USA) came from a non-european country and was invited by the organizers for the introductory talk on pyrochlores to replace S. Bramwell, unavailable. 24 PhD students attended the workshop plus numerous postdocs from various institutes. 58 institutes were represented.



SCIENTIFIC CONTENT

Along the lines decided during the steering committee in Strasbourg (May 2005), most of the fields related to Highly Frustrated Magnetism were covered, except applications, with a time slot depending on the number of participants and sub-topics represented.

The members of the programme committee were: S. Bramwell (UCL, London), A. Keren (Technion, Haifa) and F. Mila (EPFL, Lausanne), who are all members of our steering committee.

The workshop was finally organized along 7 central topics, each of them presented in one or two 1:30 hr oral sessions plus a presentation of the network by P. Mendels. For each topic, we had asked a speaker to review the field much beyond his own activity, so as to give to participants involved in other topics an introduction to that field and a review of the latest trends and most recent results. Both fame and speaker quality had guided the choice of the speakers which had been preset at our steering committee, therefore by a larger committee than the organizing and programme ones.

We detail below the various topics and present a short summary, sorted in the order of the programme. More details can be found in the programme which is annexed to this document and in the abstract booklet. No proceedings were edited but the participants were recommended to produce extended abstracts, within a one page format, along their own lines.

10 oral sessions (1:30 hr each) and 1 poster session were organized. During the oral sessions, experimental and theoretical presentations alternated, enabling a maximum osmose between the two communities. The posters were available during the whole meeting in a room aside the hall where all the coffee-breaks were organized. This allowed extensive discussions on the posters. The beginning of the second day afternoon was free for discussions or touring around and the second steering committee was organized in that slot.

The slides of the oral presentations and the files of posters will be made available on the web-site: www.lps.u-psud.fr/hfm, after participants authorization.

1- Presentation of the ESF network "Highly Frustrated Magnetism" (30 mn)

The network has been presented by P. Mendels, chair.

- Short presentation of the European Science Foundation activities. Our programme within ESF.
- HFM programme: why and who is behind: original idea, various stages of the proposal and feedback, contributing countries, composition of the steering committee
- Aims and objectives of the programme: this was the central part of the talk, presenting the various activities which can be organized within our programme: conferences, workshops, short term visits, long term visits, large scale facilities, HFM school, book on Highly Frustrated Magnetism. All this was highly advertised, with a special emphasis on exchange of young researchers, open character of our network and short response time to proposals.
- "Sociology" of the network: 270 participants registered up to now, from 13 countries + 3 showing interest (Ukraine, Russia, Croatia), sharing their activities between experiments (44%), theory (43%) and synthesis (13%, which might be overestimated).
- Planned workshops: Lyon - theory (march 2006), Stockholm – materials (may 2006), Braunschweig – experiments and theory (nov 2006). Short presentations were given by the organizers who were all participants to the workshop.

2- High – Field (2 sessions, 3hrs)

The introductory talk was given by C. Berthier from Grenoble High Magnetic Field Laboratory (GHMFL). When the Zeeman energy becomes of the order of the exchange (frustrated) energy, new exotic quantum states can be revealed with both peculiar spin textures or condensates and novel excitations. This has been a fostering field on the theory side but, in order to reach the right experimental conditions, high fields are necessary which, at the present stage of materials synthesis (large exchange interaction) can only be achieved in dedicated facilities. Many species of experimental systems present rational magnetization plateaus, alternating spin chains, 2D triangular or Shastry-Sutherland systems and 3D spinel lattices which have as various origins as Bose Einstein condensation or Wigner crystallization of the triplet excitations. Although, the high field facilities are well represented in Europe, most of the presented work was that from the GHMFL (Krämer, Berthier), Tallahassee (Stern) and from Warwick university (Lees) with more modest fields for the latter. Recent theoretical works were presented, some underlining the myriad of possibilities to stabilize magnetization plateaus- Bose-Einstein condensation (Jackeli), distortions (Penc)- others related to the exact treatment of competition between frustration and high magnetic fields in the vicinity of the saturation field (Richter, Zhitomirsky) or the effects of additional interactions such as Dzialoshinski-Moriya (Fouet), phonons (Cabra) and finally the possibility of observing chiral phases in frustrated spin chains (Vekua).

3- Pyrochlores (2 sessions, 3 hrs)

Pyrochlores are a vast family of corner sharing highly frustrated lattices most commonly built out of rare earth elements which feature a high spin (classical treatment) and single ion anisotropy. Exotic unexpected structures are therefore stabilized, extending from liquid to spin-ice states - which allows to model in the spin world the problem of ice which traces back to the 1930's. Neutrons diffraction has played and still plays an important role in the studies of these pyrochlores and was the subject of the introductory talk given by J. Gardner (NIST, USA). Various original structures or relevant perturbations recently discovered or still under extensive investigation were the subject of the following short talks: single ion anisotropy (Bonville), fluctuating $T = 0$ states (Yaouanc), ordered spin-ice (Mirebeau), frustration driven distortion (Ofer) whereas theorists showed some avenues worth to explore therefore creating a serious synthesis challenge if to compare to the existing experimental systems: Hall effect which relates to spin chirality (Lacroix), quantum dimer models (Goerbig). Theoretical concepts or techniques were also presented, strangeness of spin ice rules (Moessner), ab-initio calculations on spinel compounds (Valenti),

statistical physics of quantum dimer models. Finally thin films of ZnO-VO₂ (Golan) could bring new methods for the synthesis of spinel compounds.

4- Kagomé (1 session, 2 hrs)

Macroscopic ground state degeneracy and strong magnetic fluctuations are the major consequences of magnetic frustration in corner-sharing antiferromagnetic networks. How the lifting of degeneracy in real systems occurs and how it relates to fundamental concepts such as order by disorder or fluctuations were the subject of the introductory theory talk by P. Holdsworth who addressed this issue not only on 2D (kagome) networks but also on 3D pyrochlore lattices. Fluctuations can be detected by local dynamical studies such as μ SR, a front tool in this field, in kagome $S=3/2$ bilayers (Mendels) or $S=1/2$ kagome distorted lattices (Bert). State of the art numerical investigations were presented, which give access to the spectral properties of the ground state on $S=3/2$ model kagome bilayers, filling therefore the gap between experiments and exact diagonalizations (Lauchli) and to the study of the thermodynamical properties which can be compared directly to macroscopic measurements (Honecker). Finally, new kagome compounds (Langasites) for which single crystals are easy to produce (Bordet) were presented as well as refined structural studies on jarosites aiming at a better understanding of transverse couplings in the stacking of kagome planes in jarosites (Wills).

5- Orbital degeneracy (1 session, 1.75 hr)

Both an introduction to orbital degeneracy which occurs in transition metal oxides and a review of recent developments and current trends was given in the introductory talk by F. Mila. Orbital degeneracy can compete with magnetic frustration, yield macroscopic degeneracy of its own in magnetically unfrustrated systems, appeals for treatments in pseudo-spin space and even lead to RVB physics. The experimental realizations in connection with these properties were reviewed and further discussed in experimental or theoretical talks on thiospinels AB₂S₄ (Hemberger, Mucksch), B-spinel MgTi₂O₄ (Perkins), manganites (Oles), ab-initio NMTO and DMFT calculations of magnetic couplings (Pavarini).

6- Low dimensional (2 hrs)

When frustration combines with low dimensionality, one can naturally expect that ordered ground states will be unstable. This is quite a broad field of research encompassing new synthesis strategies using stereochemically active lone pairs elements in oxohalogenides (review talk by M. Johansson), $S=1/2$ cuprates such as edge shared chains (Li_{1-x}Na_x)Cu₂O₂ (Vasiliev, Dreschler), trigonal transition metal chain compounds, corner sharing chain of triangles (Darie, Olariu) or tetrahedra (Smontara). The interpretation of experimentally observed ground states requires a minute balance between the various types of interactions which are all relevant in this context, such as NNN, ring exchange, Dzialoshinsky-Moriya (Schmidt, A. Zvyagin).

7- Triangular (1.5 hr)

Although edge sharing triangular networks do not yield macroscopic degeneracy and fluctuating $T=0$ ground states, they present quite original ground states related to magnetic frustration and other interactions which play a dominant role. Original magnetic orders are found in recently studied KFe(MoO₄)₂, (Li_{1-x}Na_x)NiO₂. Doping adds an interesting degree of freedom as revealed in the recent emergence of Na cobaltites (Batlogg, Lemmens) or superconducting pyrochlores (Bruhwiler). Lemmens also emphasized the suitability of Raman scattering in the study of magneto-elastic couplings.

8- Two-dimensional (2 sessions 2.5hrs)

Beyond the archetypal kagomé lattices, there are many other networks and open avenues in 2D systems where magnetic frustration is present. The various possible states were classified in the introductory talk given by G. Misguich, who attempted a unifying presentation through the fundamental question: "How

can one define a quantum spin liquid?". This allowed to classify various geometries of interactions which had already been presented earlier in the workshop or were as well presented in this session both experimentally and theoretically, mainly the J1-J2 model (Carretta, Becca, Geibel, Thalmeier) where many ratios of J1/J2 interactions are still unexplored and lead to novel physics. The contractor renormalization approach, "divide and conquer", proves to be well suited in frustrated systems which present short correlation lengths. It was presented by Auerbach and Capponi. Hole doping in these networks is also a promising exploration and represents a serious theoretical challenge as underlined in the theoretical talks by Poilblanc, Ivanov and Delannoy.

ASSESSMENT and MEMO FOR GENERAL MEETINGS TO COME

So far, one month after the workshop, most of the participants whom we have been in touch with expressed their entire satisfaction about the workshop.

Below, we list a series of short comments and remarks which could serve as guidelines for future ones. Let's recall this workshop was a general one to be held every 1-1.5 year, along the model which had been set in our programme and at the 1st steering committee.

1- Major achievements:

- The workshop was open to all researchers active in the field and also to those who showed interest for highly frustrated magnetism after the letter of intent was diffused by the members of the steering committee in their respective country. Combining the flexibility of web-based registration and the free of charge registration plus partial support to travel expenses allowed to gather ca 1/3 of the european community potentially interested in Highly Frustrated Magnetism and more than decently spread the information about the activities planned in our network. This was one of the major objectives of the workshop!
- Not only advertisement but also high scientific quality could be noticed since the workshop gathered most of people with high level recent publications (see references given in abstracts and talks)
- Most of the topics of our network could be covered except the applications. This indicates that our field of research is still at a very fundamental stage and certainly the quest for possible applications should be encouraged.
- Informal exchanges: although the absence of slot in the programme for informal exchanges could be noticed, some of the participants had informal exchanges in after-dinner discussions or during the tuesday break and some collaborations could be initiated.
- Melting of communities: the idea of alternating theoretical and experimental talks during each session had a very positive impact on the exchange of information between all the communities (theory/experiments/synthesis) and was unanimously recognized as such by all the participants.
- A discussion on future workshops was organized. An official one was included in the program and others which were more spontaneous. A call for planning new workshops was made, especially from non-members of the steering committee..

2- Guidelines for improvements/general workshops

- Duration of oral presentations: the time allocated only allowed some overview of the field with the illustration of at most one point. If this was quite well suited for this first workshop where we wanted to have a maximum of oral presentations, with at least one for each research team, one should certainly pay attention in future general workshops to lengthen the duration of talks to at least 20 minutes so that deeper then fruitful discussion of concepts, analysis of the data, routes for synthesis can occur. Such a recommendation can be operated, either by making a more drastic selection of the presentations or by lengthening to at least three full days the duration of the workshop.

- Young researchers presentations: Although the audience included a good number of PhD students and postdocs, most of the oral talks were given by senior researchers. Young researchers presentations should be encouraged and should certainly not be limited to posters in future workshops.
- High field facilities: only the Grenoble High field facility was represented from Europe although the effect of high fields on frustrated magnets is a quite fashionable research topic in HFM. Making the bridge between theoretical predictions and actual experimental realizations is an area where the European community could have leading actions. Efforts should then be encouraged to spread the novelty of our physics and drag other high field facilities in the topics of HFM (proposals, local contacts). Some special attention should be made to develop this action within our network.
- Materials synthesis: one could notice that only few talks were devoted to material synthesis of new compounds. Since this is a critical issue, all the groups should have a representative at the next general meeting.
- Free discussions: more slots should be planned in the programme to favour informal exchanges between participants.
- Although this was initially planned, no round table on topical issues was organized by the programme committee. This is a communication means which should not be neglected in future workshops, since it enables exchanges between a good number of researchers at once and gives a good alternative to one-to-one private discussions.

3- Concluding remarks

In conclusion the Lalonde workshop was quite successful since it fulfilled the objectives which had been set up. Many scientists from the field of HFM had a very positive appreciation of the meeting and did welcome the existence of our network.

The Agelonde resort was quite well suited with a very professional organization, except for the limited access to Internet.

The recommendations listed above should be taken into account for future workshops.

WORKSHOP PROGRAM



Highly Frustrated Magnetism
La Londe les Maures 6-9 November 2005

Organization: C. Lacroix, P. Mendels

Secretary: M.F. Mariotto

Program: S. Bramwell, A. Keren, F. Mila

Sunday November 6

17:00 - 20:30 Registration

20:30 – 22:00 Buffet dinner

Monday November 7

8:30 - 9:00 Welcome

Presentation of the ESF network "Highly Frustrated Magnetism; P. Mendels

9:00 - 10:30 High-Field 1

9h-9h30: **Frustrated antiferromagnets under high magnetic field; C Berthier**

9h30-9h45: **Frustrated antiferromagnets at high fields: the Bose-Einstein condensation in degenerate spectra; G. Jackeli and M. E. Zhitomirsky**

9h45-10h: **NMR measurements at ^3He temperatures on 45T Magnet: ^{11}B NMR study of magnetization plateaus in $\text{SrCu}_2(\text{BO}_3)_2$; Raivo Stern, P. Kuhns, A. Reyes, W. Moulton, I. Heinmaa, H. Kooskora, and E. Joon**

10h-10h15: **Field induced gap on models with $\text{SU}(2)$ breaking interactions; JB Fouet O. Tchernyshiov F. Mila**

10h15-10h30: **NMR studies towards the magnetic structure of the 1/3 magnetization plateau in the frustrated diamond-chain compound $\text{Cu}_3(\text{CO}_3)_2(\text{OH})_2$; Steffen Krämer, Mladen Horvatic, Arnaud Comment, and Claude Berthier, Hikomitsu Kikuchi**

10:30 - 11:00 Coffee break

11:00 - 12:30 High-Field 2

11h-11h15: **Half-magnetization plateau stabilized by structural distortion in the antiferromagnetic Heisenberg model on a pyrochlore lattice; Yukitoshi Motome, Karlo Penc, Nic Shannon, Hiroyuki Shiba**

11h15-11h30: **Magnetic resonance in a strongly frustrated antiferromagnet $\text{Gd}_2\text{Ti}_2\text{O}_7$; S.S. Sosin**

11h30-11h45: **High field chiral phase for frustrated spin chains; Temo Vekua; Alexey Kolezhuk**

11h45-12h: **Magnetic field and temperature dependence of the magnetisation process in the frustrated quasi-one-dimensional oxide $\text{Ca}_3\text{Co}_2\text{O}_6$; M. R. Lees, V. Hardy, D. Flahaut, P. Manuel, J. Wooldridge, O.A. Petrenko**

12h-12h15: **Universal behavior of strongly frustrated quantum antiferromagnets in high magnetic fields; J. Richter, O. Derzhko, A. Honecker H.-J. Schmidt, J. Schnack, and J. Schulenburg**

12h15-12h30: **High-field properties of geometrically frustrated magnets; M. Zhitomirsky**

12h30-12h45: **Mass enhancement and correlation on the triangular lattice Na_xCoO_2 ; B. Batlogg**

12:30 - 14:00 Lunch

14:00 - 16:30 Poster session

16:30 – 18:00: Pyrochlores 1

16h30-17h: **Neutron studies of 3D HFM: Past present and future**; J. S. Gardner

17h-17h15: **Magnetic structure and single ion anisotropy in $Gd_2Sn_2O_7$** ; J.P. Sanchez, A.S.Wills, V.N.Glazkov, P.Bonville, D.Colson, A.Forget, P. Dalmas de Réotier, A. Yaouanc, M.E.Zhitomirsky

17h15-17h30: **A quest for frustration driven distortion in the pyrochlore system $Y_2Mo_2O_7$** ; Oren Ofer, Amit Keren, and Jason Gardner

17h30-17h45: **Anomalous Hall effect due to spin chirality in Pyrochlores and Kagomé systems** ; C. Lacroix, M. Taillefumier, B. Canals, V. K. Dugaev and P. Bruno

17h45-18h: **Quantum dimer models on the pyrochlore lattice**; R. Moessner, S. L. Sondhi, and M. O. Goerbig

18:00 - 18:30 Coffee break

18:30 - 20:00 Pyrochlore 2

18h30-18h45: **Why spin ice obeys the ice rules**; S. V. Isakov, R. Moessner, and S. L. Sondhi

18h45-19h: **Magnetic order and spin dynamics in frustrated magnetic materials**; P. Dalmas de Réotier, V. Glazkov, C. Marin, A. Yaouanc, P. Bonville, J.A. Hodges, P.C.M. Gubbens

19h-19h15: **Ordered spin ice state and magnetic fluctuations in $Tb_2Sn_2O_7$** ;I. Mirebeau, A. Apetrei, J. Rodriguez-Carvajal, P. Bonville, F. Ladieu, A. Forget, D. Colson, V. Glazkov , J. P. Sanchez, O. Isnard and E. Suard

19h15- 19h30: **Spinels: an exciting class of frustrated quantum magnets**; Roser Valenti

19h30-19h45:**Investigation of phase transitions in $ZnO-VO_2$ thin films**; A. Axelevitch, G. Golan, B. Gorenstein, A. Verdian, V. Manevich

19h45-20h: **From quantum mechanics to classical statistical physics: generalized Rokhsar-Kivelson Hamiltonians and the “stochastic matrix form” decomposition**; P. Pujol, C. Castelnovo, C. Chamon, C. Mudry

20:00 Dinner

Tuesday November 8

8:30 - 10:30 Kagomé

8h30-9h: **Degeneracy lifting in highly frustrated magnetic systems;** [P.C.W. Holdsworth](#)

9h-9h15: **Local static properties and dynamic fluctuations in kagomé and other corner-sharing antiferromagnets;** [P. Mendels](#), D. Bono, F. Bert, A. Olariu, L. Limot, G. Collin, N. Blanchard, P. Bordet, C. Darié, F. Duc, J.C. Trombe

9h15-9h30: **Dynamics in Pure and Substituted Volborthite Kagomelike Compounds ;** [F. Bert](#), P. Mendels, D. Bono, A. Olariu, F. Ladieu, J.-C. Trombe, F. Duc

9h30-9h45: **Spectral properties of $S = 3/2$ spins on the kagomé lattice;** S. Dommange, [A. Läuchli](#), J.-B. Fouet, and F. Mila

9h45-10h: **Magnetic frustration on a kagomé lattice in Nd- and Pr- langasites;** [P. Bordet](#), I. Gélard, K. Marty, A. Ibanez, J. Robert, V. Simonet, B. Canals, R. Ballou and P. Lejay

10h-10h15: **Computing Effective Hamiltonians of Doped and Frustrated Antiferromagnets by Contractor Renormalization (CORE);** [Assa Auerbach](#)

10h15-10h30: **The jarosites- linking structure and magnetism;** [A.S. Wills](#)

10:30 - 11:00 Coffee break

11:00 - 12:30 Orbital degeneracy

11h-11h30 **Orbital degeneracy: recent developments and current trends;** [F. Mila](#)

11h30-11h45: **From a spin-liquid to an orbital glass in A-site thiospinels;** [J. Hemberger](#), P. Lunkenheimer, R. Fichtl, S. Weber, N. Büttgen, H.-A. Krug von Nidda, V. Fritsch, V. Tsurkan, A.Loidl

11h45-12h: **Valence bond crystal in a pyrochlore antiferromagnet with orbital degeneracy;** S. Di Matteo, G. Jackeli, C. Lacroix, and [N. B. Perkins](#)

12h-12h15: **Doping dependence of spin and orbital correlations in doped manganites;** [Andrzej Oles](#), Maria Daghofer

12h15-12h30: **First principles calculation of exchange coupling constants in Mott insulators;** [E. Pavarini](#)

12:30 - 14:00 Lunch

14:00 - 16:15: Free

16:15 18:15 Low dimensional

16h15-16h30: **Magnetization plateaux induced by a coupling to the lattice**; T. Vekua, D. C. Cabra, A. Dobry, C. Gazza, and D. Poilblanc

16h30-17h: **Novel transition metal oxohalogenides** ; Mats Johansson

17h-17h15: **Spin Waves and magnetic interactions in Li_2CuO_2** ; T. Masuda, A. Zheludev, B. Roessli, A. Bush, M. Markina, and A. Vasiliev

17h15-17h30: **Ring Exchange in Cuprate Ladder Systems**; Kai P. Schmidt and Götz S. Uhrig

17h30-17h45: **Helical and Weak Ferromagnetism in Frustrated Edge-Sharing Chain Cuprates**; S.L. Drechsler, J. Richter, A.A. Gippius, A. Vasiliev, A.A. Bush, A.S. Moskvina, J. Malek, R. Kuzian, Yu. Prots, W. Schnelle, H. Rosner

17h45-18h: **Exact Results for Low-Dimensional Quantum Antiferromagnets with Spin Frustration**; A. A. Zvyagin

18h-18h15: **Magnetic ordering in trigonal chain compounds**; C. Hackenberger, V. Eyert, U. Schwingenschlögel, R. Fresard, T. Kopp, U. Eckern

18:15 - 18:45 Coffee break

18:45 – 19h45: Triangular

18h45-19h: **Coexistence of Spiral and Collinear Structures in $\text{KFe}(\text{MoO}_4)_2$** ; O.A. Petrenko, L.E. Svistov, A.I. Smirnov, L.A. Prozorova, L.N. Demianets and A.Ya. Shapiro

19h-19h15: **Itinerant correlated electrons on 2D and 3D triangular lattices**; M. Brühwiler, S. M. Kazakov, J. Karpinski, B. Batlogg

19h15-19h30 : **Unconventional magnetic order in the triangular $S=1/2$ layered compound $(\text{Li},\text{Na})\text{NiO}_2$** ; S. De-Brion, M. Holzappel, G. Chouteau, C. Darie, D. Talbayev, L. Mihaly

19h30-19h45: **Heisenberg triangular lattice in $\text{Cu}(\text{tn})\text{Cl}_2$ and $\text{Cu}(\text{en})(\text{H}_2\text{O})_2\text{SO}_4$ with spatial anisotropy of exchange coupling mediated by hydrogen bonds**; A. Orendáčová, V. Zeleňák, M. Orendáč, M. Kajňáková, E. Čižmár, J. Černák, A. Anders, A. Feher, M.W. Meisel

20:00 Workshop dinner

Wednesday November 9

8:30 - 10:30 Two-dimensional 1

8h30-9h: **Quantum aspects of frustrated magnets and spin liquids**; Grégoire Misguich

9h-9h15: **Magnetic properties of frustrated two-dimensional $S=1/2$ antiferromagnets on a square lattice**; P. Carretta, N. Papinutto, F. Duc and S. Gonthier

9h15-9h30: **Improved variational phase diagram of the J_1 - J_2 model on the square lattice**; F. Becca, A. Parola, S. Sorella

9h30-9h45: **Thermodynamic properties of frustrated quantum magnets**; Andreas Honecker

9h45-10h: **Effective Hamiltonian approach for quantum magnets**; Sylvain Capponi

10h-10h15: **Raman scattering on 2D HFM: low energy electronic and magnetic excitations**; P. Lemmens

10h15-10h30: **The role of magnetic excitations in the thermal conductivity of the frustrated spin system $\text{Cu}_2\text{Te}_2\text{O}_5(\text{Cl}_{2-x}\text{Br}_x)$ system**; Ante Bilušić, Ana Smontara, Igor Smiljanić, Zvonko Jagličić, Janez Dolinšek, Helmuth Berger

10:30 - 11:00 Coffee break

11:00 - 12:15 Two-dimensional 2

11h-11h15: **Frustrated $S = 1/2$ square lattice systems in complex Vanadium oxides**; C. Geibel, E.E. Kaul, N. Kini, R. Shpanchenko, K. Penc, N. Shannon

11h15-11h30: **Finite temperature properties of frustrated square lattice spin-1/2 compounds**; Peter Thalmeier, Burkhard Schmidt, Nic Shannon and Karlo Penc

11h30-11h45: **Resonating-valence-bond structure of Gutzwiller-projected superconducting wave functions**; D. A. Ivanov

11h45-12h: **Magnetism in La_2CuO_4 : when frustrating interactions do not frustrate**; J.-Y. P. Delannoy, M.J.P. Gingras, P.C.W. Holdsworth, A.-M.S. Tremblay

12h-12h15: **Doped 2D frustrated magnets: spin-charge separation and unconventional superconductivity**; Didier Poilblanc

12:15 - 14:00 Lunch

Posters

P1 – **Ferromagnetic-spin glass transition induced by pressure in the geometrically frustrated pyrochlore $(\text{Tb}_{1-x}\text{La}_x)_2\text{Mo}_2\text{O}_7$** ; A. Apetrei, I. Mirebeau, I. N. Goncharenko, P. Bonville, A. Forget and D. Colson²

P2 – **Structural distortions influencing the magnetism within a kagomé antiferromagnet**; W. Bisson, A.S. Wills

P3 – **Charge ordering effects in the electronic structure of Na_xCoO_2 compounds**; A. Bourgeois

P4 – **Crystal growth and Structure Refinement of Oxidized Delafossite $\text{YCuO}_{2+\delta}$ ($\delta=0.5, 0.66$) containing triangular Cu planes** ; C. Darie, B. Fournis, P. Bordet, P. Lejay, O. Garlea

P5 – **Atomic Fermi gas in the trimerized kagomé lattice**; B. Damski, H.-U. Everts, H. Fehrmann, A. Honecker, L. Santos, M. Lewenstein

P6 – **Frustration in $R_2\text{PdSi}_3$ ($R = \text{Tb}, \text{Er}$) compounds: Spin-glass or magnetic short-range order? Neutron diffraction studies**; M. Frontzek, A. Kreyssig, M. Doerr, J.-U. Hoffmann, M. Loewenhaupt

P7 – **Reduced Density Matrices and Topological Order in Quantum Dimer Models**; Shunsuke Furukawa, Grégoire Misguich, and Masaki Oshikawa

P8 – **Investigation of a 2D quantum anti-ferromagnet, with a symmetry breaking four-fold-degenerated ground state**; Alain Gellé, Andreas Läuchli, Kumar Brijesh, and Frédéric Mila

P9 - **Magnetic Properties and ESR of the Quantum-Spin System $\text{Na}_{1.286}\text{V}_2\text{O}_5$** ; A. M. Ghorayeb, M. Goiran, J.-M. Broto, P. Millet, and A. Stepanov

P10 – **Correlation induced Peierls instabilities in doped frustrated antiferromagnets: “Valence bon solids” away from half filling**; M. Indergand, A. Läuchli, S. Capponi, M. Sigrist

P11 - **Paramagnetic-ferromagnetic transition in a double-exchange model**; E. Kogan, M. Auslender

P12 - **Excitation spectrum of an acute angle helimagnet above the saturation magnetic field**; R.O. Kuzian

P13 – **The Ising phase in the $J_1 - J_2$ Heisenberg Model**; Valeria Lante and Alberto Parola

P14 - **Theoretical constraints on the Néel Spin-Peierls transition in two dimensional quantum spin models**; Leonardo Spanu, Federico Becca, Sandro Sorella

P15 – **Sodium Cobaltates: Crystal growth, Structure, Thermoelectricity, and Superconductivity**; C. T. Lin, D. P. Chen, and A. Maljuk, P. Lemmens

P16 – **RVB approach to the frustrated regime of $J_1 - J_2 - J_3$ Heisenberg quantum antiferromagnet on the square lattice**; M. Mambrini

P17 – **Magnetic entropy change in highly frustrated Kagomé $\text{SrCr}_8\text{Fe}_x\text{Ga}_{4-x}\text{O}_{19}$** ; Xavier Batlle, Fèlix Casanova, Amílcar Labarta., B. Martínez.

P18 – **Magnetic ordering of the triangular Fe lattice in piezoelectric $\text{Ba}_3\text{NbFe}_3\text{Si}_2\text{O}_{14}$** ; K. Marty, P. Bordet, I. Gélard, A. Ibanez, O. Isnard, B. Menaert, V. Simonet, B. Canals, R. Ballou

P19 – **Frustration and Magnetic Order in MSc_2S_4 (M=Mn, Fe) Spinel Compounds**; M. Mücksch, A. Krimmel, A. Podlesnyak, A. Cervellino, D. Sheptyakov, C. Ritter, M. M. Koza, H. Mutka, V. Tsurkan, S. Horn, A. Loidl

P20 – **μSR and NMR study of frustrated $S=1/2$ delafossites $\text{YCuO}_{2+\delta}$** ; A. Olariu, D. Bono, F. Bert, P. Mendels, C. Darie, P. Bordet, V. Simonet

P21 – **Experimental study of magnetocaloric effect in dipolar spin ice $\text{Dy}_2\text{Ti}_2\text{O}_7$** ; M. Orendáč, A. Orendáčová, A. Vlček, J. Lago, M. Shirai, S. T. Bramwell

P22 – **First Order Phase Transition in the three-leg frustrated Spin Tube**; J.-B. Fouet, A. Läuchli, S. Pilgram, R. Noack, and F. Mila

P23 – **Low-temperature behavior of a frustrated antiferromagnet at high fields**; R.R. Ramazashvili, M. E. Zhitomirsky

P24 – **Far-infrared study of $\text{Sr}_{14}\text{Cu}_{24}\text{O}_{41}$: spin gap in chains**; T. Room, D. Huvonen, U. Nagel, P. Haas, B. Gorshunov, M. Dressel, Y.J. Wang, J. Akimitsu, T. Sasaki, and T. Nagata

P25 – **Magnetic Field Influence on the Heat Capacity of the Spin-Peierls Compound CuGeO_3** ; S. Sahling, J.C. Lasjaunias, G. Remenyi,

P26 - **Spin-chains in $(\text{Ca},\text{La},\text{Sr})_{14}\text{Cu}_{24}\text{O}_{41}$** ; Cosima Schuster and Udo Schwingenschlögl

P27 – **How to have fun with a square lattice frustrated ferromagnet**; Nic Shannon, Karlo Penc, Burkhard Schmidt, Tsutomu Momoi, Philippe Sindzingre, and Peter Thalmeier

P28 – **$\text{BaCuSi}_2\text{O}_6$: Structural phase transition at low temperatures**; K. Sparta, M. Merz, G. Roth, R. Stern, A. Junod, P. Monod, T. Kimura

P29 – **Two dimensional tetramer-cuprate $\text{Na}_5\text{RbCu}_4(\text{AsO}_4)_4\text{Cl}_2$: phase transitions and AF order as seen by ^{87}Rb NMR**; Raivo Stern, J. Clayhold, A. Junod, M. Kartin-Ulutagay, X. Mo, W. Queen, S.-J Hwu, P. Kuhns, A. Harter, A. Reyes, W. Moulton, I. Heinmaa, A. Kriisa, S. Vija, E. Joon

P30 – **Ground state entanglement in spin-1/2 Heisenberg antiferromagnets on two-dimensional lattices with corner-sharing triangles**; P. Tomczak, J. Richter

P31 – **"Quantum critical points" in antiferromagnetic molecular nanomagnets**; O. Waldmann,

P32 – **Complex magnetic phases in $\text{Ni}_3\text{V}_2\text{O}_8$ and $\text{Co}_3\text{V}_2\text{O}_8$** ; Nicola Wilson, Oleg Petrenko, Geetha Balakrishnan, Laurent Chapon, Pascal Manuel

P33 – **Magnetism in Sodium Cobalt Oxide**, J. Wooldridge, M. R. Lees, G. Balakrishnan, D. Mc K. Paul

P34 - **High-Field Electron Spin Resonance in Quasi-2D Frustrated Spin System $\text{SrCu}_2(\text{BO}_3)_2$** ; S.A. Zvyagin, J. Wosnitza, J. Krzystek, R. Stern, H. Dabkowska, B. Gaulin

P35 - **Incommensurate helix magnetic order in 1D cuprates LiCu_2O_2 and NaCu_2O_2 as seen by NMR**; .A. Gippius, E.N. Morozova, K.S. Okhotnikov, A.S. Moskvin, S.-L. Drechsler, and M. Baenitz

PARTICIPANTS

Name	FirstName	Institution	Email
ALET	Fabien	Laboratoire de Physique Theorique, Toulouse, France	alet@irsamc.ups-tlse.fr
SMONTARA	Ana	Laboratory for thermal conductivity investigations, Institute of physics, Zagreb, Croatia	ana@ifs.hr
LAUECHLI	Andreas	IRRMA, Ecole Polytechnique Federale de Lausanne (EPFL), Switzerland	laeuchli@comp-phys.org
APETREI	Anca Mihaela	Laboratoire Léon Brillouin, CEA Saclay, France	apetrei@llb.saclay.cea.fr
AUERBACH	Assa	Technion, Israel	assa@physics.technion.ac.il
BATLOGG	Bertram	ETH Zurich, Switzerland	
BECCA	Federico	INFN-CNR Democritos and SISSA, Italy	becca@sissa.it
BENDJAMA	Rachel	Ecole Polytechnique Federale de Lausanne (EPFL), Switzerland	rachel.bendjama@epfl.ch
BERT	Fabrice	Laboratoire de Physique des Solides, Orsay, France	bert@lps.u-psud.fr
BERTHIER	Claude	Laboratoire de Spectrométrie Physique, Grenoble, France	berthier@grenoble.cnrs.fr
BHASEEN	Joseph	Rudolf Peierls Centre for Theoretical Physics, Oxford University, Great Britain	bhaseen@thphys.ox.ac.uk
BISSON	William	The Royal Institution of Great Britain, The Institut Laue-Langevin, Great Britain	willb@ri.ac.uk
BONVILLE	Pierre	Laboratoire de Spectroscopie Mossbauer, CEA Saclay, France	bonville@spec.saclay.cea.fr
BORDET	Pierre	Laboratoire de Cristallographie Grenoble, France	pierre.bordet@grenoble.cnrs.fr
BOURGEOIS	Antonin	Laboratoire de Physique des Solides, Orsay, France	bourgeois@lps.u-psud.fr
BRENIG	Wolfram	Institute for Theoretical Physics, Technical University Braunschweig, Germany	w.brenig@tu-bs.de
BRÜHWILER	Markus	Lab for Solid State Physics, ETH Zürich, Switzerland	markus.bruehwiler@phys.ethz.ch
CABRA	Daniel	Laboratoire de Physique Theorique, Universite Louis Pasteur, Strasbourg, France	cabra@lpt1.u-strasbg.fr
CAPPONI	Sylvain	Laboratoire de Physique Theorique, Toulouse, France	capponi@irsamc.ups-tlse.fr
CARRETTA	Pietro	Dip. di Fisica "A.Volta"-University of Pavia, Italy	carretta@fisicavolta.unipv.it
DARIE	Céline	Laboratoire de Cristallographie Grenoble, France	celine.darie@grenoble.cnrs.fr
DE BRION	Sophie	Grenoble High Magnetic Field Laboratory, Grenoble, France	sophie.debrion@grenoble.cnrs.fr
DEE	Amy	The Royal Institution of Great Britain, The Institut Laue-Langevin, Great Britain	amy@ri.ac.uk
DE MUER	Albin	Grenoble High Magnetic Field Laboratory, Grenoble, France	demuer@grenoble.cnrs.fr
DELANNOY	Jean-Yves	Laboratoire de Physique, Ecole Normale Supérieure de Lyon, France	jydelann@ens-lyon.fr

DRECHSLER	Stefan-Ludwig	Institut für Theoretische Festkörperphysik, IFW Dresden, Germany	s.l.drechsler@ifw-dresden.de
EVERTS	Hans-Ulrich	Institut fuer Theoretische Physik, Universitaet Hannover, Germany	everts@itp.uni-hannover.de
FOUET	Jean Baptiste	IRRMA, Ecole Polytechnique Federale de Lausanne (EPFL), Switzerland	jean-baptiste.fouet@epfl.ch
FRONTZEK	Matthias	Institut fuer Festkoerperphysik, Technische Universität Dresden, Germany	Frontzek@physik.tu-dresden.de
FURUKAWA	Shunsuke	Lab. Physique Theorique de la Matiere Condensee, Univ. P. et M. Curie, Paris, France	Shunsuke.Furukawa@cea.fr
GARDNER	Jason	NIST Center for Neutron Research	jsg@nist.gov
GEIBEL	Christoph	Max-Planck Institute for Chemical Physics of Solids, Germany	geibel@cpfs.mpg.de
GELLÉ	Alain	Institut de Théorie des Phénomènes Physiques, EPFL, Lausanne, Switzerland	alain.gelle@epfl.ch
GHORAYEB	André	L2MP, Université Paul Cézanne (Aix-Marseille III), France	andre.ghorayeb@L2MP.fr
GOERBIG	Mark Oliver	Laboratoire de Physique des Solides, Orsay, France	goerbig@lps.u-psud.fr
GOLAN PROF.	Gady	Holon Inst. of Technology, Israel	golan@hait.ac.il
HACKENBERGER	Christian	Experimetalphysik VI, EKM, Universitaet Augsburg, Germany	christian.hackenberger@physik.uni-aug
HAYN	Roland	L2MP, Université Paul Cézanne (Aix-Marseille III), France	roland.hayn@l2mp.fr
HEMBERGER	Joachim	Center for Electronic Correlation and Magnetism, University of Augsburg, Germany	hem@physik.uni-augsburg.de
HOLDSWORTH	Peter	Laboratoire de Physique, Ecole Normale Supérieure de Lyon, France	peter.holdsworth@ens-lyon.fr
HONECKER	Andreas	Institute for Theoretical Physics, Technical University Braunschweig, Germany	a.honecker@tu-bs.de
INDERGAND	Martin	Institut für Theoretische Physik, ETH Zürich, Switzerland	martini@phys.ethz.ch
IVANOV	Dmitri	Institute for Theoretical Physics, EPFL, Switzerland	ivanov@alum.mit.edu
JACKELI	George	Institute for Theoretical Physics, EPFL, Switzerland	george.jackeli@epfl.ch
JOHNSSON	Mats	Arrhenius laboratory, Inorganic Chemistry, Sweden	matsj@inorg.su.se
KEREN	Amit	Technion-Israel Institute of Technology, Israel	keren@physics.technion.ac.il
KOGAN	Eugene	Physics Department, Bar-Ilan University, Israel	kogan@quantum.ph.biu.ac.il
KRAEMER	Steffen	Grenoble High Magnetic Field Laboratory, Grenoble, France	skramer@grenoble.cnrs.fr
KUZIAN	Roman	Institute for Problems of Materials Science, Kiev, Ukraine	kuzian@mail.ru
LACROIX	Claudine	Laboratoire Louis Néel, Grenoble, France	lacroix@grenoble.cnrs.fr
LANTE	Valeria	UNIVERSITA' degli STUDI dell' INSUBRIA , COMO, Italy	valeria.lante@uninsubria.it
LEES	Martin	Physics Department, Warwick University, Great Britain	m.r.lees@warwick.ac.uk
LEMMENS	Peter	Inst. for Physics of Condensed Matter, TU Braunschweig, Germany	+49 (0)531 391 - 5155

LEONARDO	Spanu	International School of Advanced Studies (SISSA), Italy	spanu@sissa.it
LIN	Chengtian	Max-Planck-Institute, Stuttgart, Germany	ct.lin@fkf.mpg.de
MAMBRINI	Matthieu	Laboratoire de Physique Theorique, Toulouse, France	mambrini@irsamc.ups-tlse.fr
MARTÍNEZ	Benjamín	Instituto de Ciencia de Materiales de Barcelona-CSIC, Spain	ben.martinez@icmab.es
MARTY	Karol	Laboratoire de Cristallographie Grenoble, France	karol.marty@grenoble.cnrs.fr
MENDELS	Philippe	Laboratoire de Physique des Solides, Orsay, France	mendels@lps.u-psud.fr
MILA	Frederic	Institute for Theoretical Physics, EPFL, Switzerland	frederic.mila@epfl.ch
MIREBEAU	Isabelle	Laboratoire Léon Brillouin CEA-CNRS, Saclay, France	mirebea@dsm-mail.saclay.cea.fr
MISGUICH	Gregoire	SPHT Saclay, CEA, France	gmisguich@cea.fr
MOESSNER	Roderich	Laboratoire de Physique Theorique, Ecole Normale Superieure, Paris, France	moessner@lpt.ens.fr
MOSKVIN	Alexander	Leibniz Institute, Dresden, Germany	A.Moskvin@ifw-dresden.de
MÜCKSCH	Michael	Institut Laue Langevin, Grenoble, France	muecksch@ill.fr
MUTKA	Hannu	Institut Laue Langevin, Grenoble, France	mutka@ill.fr
OFER	Oren	Technion-Israel Institute of Technology, Israel	oren@physics.technion.ac.il
OLARIU	Areta	Laboratoire de Physique des Solides, Orsay, France	olariu@lps.u-psud.fr
OLES	Andrzej M.	Jagellonian University, Krakow, Poland	a.m.oles@fkf.mpg.de
ORENDAC	Martin	P. J. Safarik University, Kosice, Slovakia	orendac@kosice.upjs.sk
ORENDACOVA	Alzbeta	P. J. Safarik University, Kosice, Slovakia	aorendac@kosice.upjs.sk
PAVARINI	Eva	Dip. di Fisica "A.Volta"-University of Pavia, Italy	pavarini@pv.infn.it
PAYEN	Christophe	Institut des Matériaux Jean Rouxel, Nantes, France	christophe.payen@cnrs-imn.fr
PENC	Karlo	Research Institute of Solid State Physics and Optics, Hungary	penc@szfki.hu
PERKINS	Natalia	MPIPKS, Dresden, Germany	perkins@mpipks-dresden.mpg.de
PETRENKO	Oleg	Physics Department, Warwick University, Great Britain	O.Petrenko@warwick.ac.uk
PILGRAM	Sebastian	ETH Zurich, Switzerland	pilgram@phys.ethz.ch
POILBLANC	Didier	Laboratoire de Physique Theorique, Toulouse, France	didier.poilblanc@irsamc.ups-tlse.fr
PUJOL	Pierre	Laboratoire de Physique, Ecole Normale Supérieure de Lyon, France	Pierre.Pujol@ens-lyon.fr
RAMAZASHVILI	Revaz	LPTMS, Universite Paris-Sud Orsay, France	revaz@pks.mpg.de
RICHTER	Johannes	Institut für Theoretische Physik, Universität Magdeburg, Germany	johannes.richter@physik.uni-magdeburg.de

RÕÕM	Toomas	National Institute of Chemical Physics and Biophysics, Tallin, Estonia	roomtom@kbfi.ee
SAHLING	Sven	Institut für Festkörperphysik, TU Dresden, Germany	dr.sahling@web.de
SCHMIDT	Kai Phillip	Institute for Theoretical Physics, EPFL, Switzerland	kaiphillip.schmidt@epfl.ch
SCHUSTER	Cosima	Institut für Physik, Universität Augsburg, Germany	cosima.schuster@physik.uni-augsburg.
SHANNON	Nic	H H Wills Physics Lab., University of Bristol ,Great Britain	nsps@mpipks-dresden.mpg.de
SOSIN	Sergey	P. Kapitza Institute for physical problems, Moscow, Russia	sosin@kapitza.ras.ru
SPARTA	Karine	Institut fuer Kristallographie, RWTH Aachen, Germany	sparta@xtal.rwth-aachen.de
STERN	Raivo	National Institute of Chemical Physics and Biophysics, Tallin, Estonia	stern@kbfi.ee
TARONI	Andrea	Laboratoire de Physique, Ecole Normale Supérieure de Lyon, France	
THALMEIER	Peter	Max Planck Institute for Chemical Physics of Solids, Dresden, Germany	thalm@cpfs.mpg.de
TOMCZAK	Piotr	Adam Mickiewicz University, Poznan, Poland	tomczak@man.poznan.pl
TROYER	Matthias	Theoretische Physik, ETH Zurich, Switzerland	troyer@phys.ethz.ch
VALENTI	Maria-Roser	Institute of Theoretical Physics, University of Frankfurt, Germany	valenti@itp.uni-frankfurt.de
VASILIEV	Alexander	Low Temperature Physics and Superconductivity Department, Moscow State University, Russia	anvas2000@yahoo.com
VEKUA	Teimuraz	Laboratoire de Physique Theorique, Universite Louis Pasteur, Strasbourg, France	vekua@lpt2.u-strasbg.fr
WALDMANN	Oliver	Department of Chemistry and Biochemistry, University of Bern, Switzerland	waldmann@iac.unibe.ch
WILLS	Andrew		a.s.wills@ucl.ac.uk
WILSON	Nicola	Physics Department, Warwick University, Great Britain	Nicola.R.Wilson@warwick.ac.uk
WOOLDRIDGE	Jenny	Physics Department, Warwick University, Great Britain	j.wooldridge@warwick.ac.uk
YAOUANC	Alain	SPSMS/DRFMC, CEA-Grenoble, France	ayaouanc@cea.fr
ZHITOMIRSKY	Mike	SPSMS/DRFMC, CEA-Grenoble, France	mike.zhitomirsky@cea.fr
ZVYAGIN	Andriy	B.I.Verkin Institute of Ukraine and Max-Planck-Institut, Dresden, Germany	zvyagin@mpipks-dresden.mpg.de
ZVYAGIN	Sergei	Hochfeld-Magnetlabor Dresden, Forschungszentrum Rossendorf, Dresden, Germany	S.Zvyagin@fz-rossendorf.de