Methodology

The 15 candidates were pre-selected by the University, and are therefore all qualified to some degree, and have a research portfolio that is aligned with the broad aims of the search. The 15 candidates were classed in different groups, but not ranked within the group. The following principles have been used:

Top group (4 candidates): Candidates in this group are well-known international experts with clearly identifiable 'own' contributions to their research field and a strong overall publications record. Their international standing has been recognized by invitations at international conferences etc. They also have exciting and credible plans for their future research. They also have experience in supervising post-docs and PhD students at a level that is appropriate for their seniority. These candidates have proven leadership qualities and a well-developed network of international collaborations. All these candidates have experience in teaching at graduate level (e.g., in summer schools), and many have a strong funding portfolio. However, some have spent most of their careers at international large-scale facilities, so their teaching skills have not been recently demonstrated, especially at undergraduate level, and/or to apply for grants. The different level of teaching/funding experience is clearly identified in the description of each candidate, but candidates were not disqualified on the grounds of teaching or funding. In my institution, it is current practice to ask the candidate for a teaching demonstration, which may be attended and rated by undergraduates in some cases.

Medium group (5 candidates): Candidates in this group have strong track records of research and a sizeable publication list, although their unique contribution to the field may not be easily identifiable. They have a recognized international standing, and, in some cases, excellent records of teaching and supervision at different levels. In some cases, the research plans of these candidates are somewhat generic and in general less convincing than for top-rated candidates. Nevertheless, *all candidates in the middle group are worth interviewing*, if possible.

Lower group (6 candidates): The international standing and research track record of these candidates is somewhat less than for candidates in the other groups. In some cases, there is evidence of potential but the candidates are too junior to be considered for such a position.

Top Group

2.Bella Lake

PhD 1997 Oxford. Currently W2 professor at the Department of Physics, Berlin Technical University and Head of department EM-AQM (~20 people) 'Quantum Phenomena in Novel Materials´ at Helmholtz Zentrum Berlin für Materialien und Energie, Germany. The applicant is an international expert who is best known for her neutron scattering work in the field of frustrated magnetism and other model magnetic systems. Later, she also broadened her interests to the field of multifunctional materials and to other techniques such as muon spectroscopy, synchrotron x-rays and bulk properties measurements. Her research proposal is focused on the search for novel spin liquids and on the application of the most advanced techniques to study them. Although rather 'traditional', this field has experienced a true renaissance due to the availability of new theoretical-computational techniques that yield specific predictions on these systems. Prof. Lake has very good experience in leading large research groups and Departments

comprising a variety of experimental techniques, as well as general University administration. Prof. Lake's track record of funding is excellent, and she has a very good teaching experience, which includes the organization of specialized schools. She has supervised numerous PhD students as well as post-docs. As a neutron 'power user' she has experience in advising facilities on instrumentation development. In particular, she is already well engaged with several ESS instruments. All this makes Prof. Lake a very strong candidate for this position.

3. Bjorn Fåk

PhD 1990 Uppsala. Currently Physicist and Instrument Scientist at Institut Laue-Langevin, Grenoble, France. The applicant is a well-known international neutron scattering expert, with a long history of distinguished contributions, particularly in the field of quantum liquids (^{3}He and ^{4}He) and model magnetism in heavy fermions, superconductors and frustrated systems. His research proposal is in the line of the earlier themes, although the candidate will be able to make the best of the new facilities available in the Lund area, some of them with transformative capabilities. Dr Fåk has been an instrument scientist at both reactor and spallation neutron sources, and is very familiar with neutron techniques and instrumentation. He has a long track record of (mainly co-) supervising PhD students, some of them now well known scientists (e.g., Ken Andersen, Tom Fennell), as well as supervising post-docs. He has been a scientist at neutron facilities and at CEA for most of his career, so he has little experience of undergraduate teaching and had little need to apply for competitive grants. By contrast, he has had good administration experience at Group Leader level, albeit in a setting that is different from that of a University.

4. Danny Mannix

PhD 1998 Liverpool. Currently Researcher at Division of Synchrotron Radiation, Lund University, and also Research Associate, CNRS, Institut Neél, Grenoble France. A strong research proposal for a candidate who is very well known and established, particularly in the field of magnetic X-ray diffraction but also RIXS and neutron scattering (elastic inelastic). His proposal is creative beyond the traditional fields, and extends to the time domain (THz) and to nano-imaging and coherent imaging of magnetic and non-magnetic systems. He is well established in Lund with strong collaborative programmes, and will have an immediate impact. The candidate has an excellent experience as a PhD supervisor and has undergone a good level of training in teaching techniques. The UG-level teaching was rather specialist, but the candidate received good feedback.

12. Mechthild Enderle

PhD 1993 Mainz. Currently Research scientist at the Institut Laue-Langevin (ILL), Grenoble, France . Prof. Enderle is an international expert in the field of quantum magnetism, who uses inelastic neutron scattering with polarization analysis as her probe of choice, but who is also very familiar with X-ray scattering techniques and with exploiting the complementarity between these techniques, with the support of laboratory measurements. She has an outstanding reputation for her extremely careful work in various sub-fields, including quantum and frustrated magnetism, magnetism in simple elements, phonons in nano-crystals etc. She has also made significant contributions to the field of multiferroics. The focus of her future activity is on novel electronic phases stabilized by quantum fluctuations, where many electronic spins are entangled into a collective quantum ground state. This is not a new field, but has been currently rejuvenated by novel theoretical/computational techniques

with strong predictive power. One very original research direction is that related to preparing regular arrays of nano-objects with frustrated geometry. Overall, Prof Enderle's research track record and future plan appear to be highly original. Prof Enderle is perceived by many as the go-to scientist for complex experiments with polarized neutrons, and as such she has a host of international collaborations at the highest possible level. He has supervised several PhD students, some of them new rather well known (e.g., Martin Mourigal). She has taught undergraduate courses in the past at U of Mainz and U des Saarlandes, she is a much-sought-after lecturer at international schools, and she is currently Guest Professor in Lund. She has been a research scientist and local contact at the ILL for many years, so she does not have recent experience of University Administration and of applying for external funding.

Medium Group

7. Elizabeth Blackburn

PhD Grenoble 2005. Currently a Reader at the University of Birmingham. The applicant has gained a significant reputation for the study of charge density wave order in underdoped YBa2Cu3O7-x by hard X-rays. Her more general interest includes magnetism both dynamic and static, particularly in conjunction with unconventional superconductivity and correlated systems. She has made significant contributions to the field of heavy fermions. Being relatively early in her career and embedded in groups with a strong reputation, it is difficult to ascertain exactly her leadership potential, although it is fair to point out that her post-doctoral stay in San Diego was also very productive. She has become an expert in sample environment, (the 17 T magnet she has designed was instrumental for the CDW work), and in this capacity she is chairing the European Spallation Source Sample Environment Advisory Panel. Her grant portfolio is from EPSRC, and is also mostly in the field of sample environment. The lack of a clear statement of her future research plans beyond the idea of continuing to develop advanced sample environment is somewhat disappointing. Dr Blackburn has excellent teaching qualifications. Given her seniority, her track record of supervising PhD students and of university administration is also very good. On this basis, *I would recommend an interview* (if possible), with the focus on probing Dr Blackburn vision for future research.

8.Hermann A. Dürr

PhD 1989 Bayreuth. Currently Adjunct Professor for Ultrafast X-Ray Science, University of Amsterdam, NL, 2011-present and Senior Staff Scientist, SLAC National Accelerator Laboratory 2010-present. Expertise in ultra-fast probes of magnetism using synchrotron techniques. Clearly a strong candidate with wide experience and well respected in the community. Being based at a facility, it is hard to understand exactly what his original contribution is and whether one could substantiate his claim of being "a pioneer in using x-rays for magnetism and strong correlated materials research". He has certainly co-authors important papers on optical switching of magnetism. His statement about future directions of his research, if appointed, is rather vague. His teaching/supervision portfolio is, understandably, not commensurate with his seniority. His funding track record is good, but in recent years has been entirely from the DOE. *Dr Dürr is clearly worth an interview, if possible.*

10. Kim Lefmann

PhD 1995 Copenhagen. Currently Associate Professor at the Niels Bohr Institute, Univ. Copenhagen. The applicant is a well-known figure in international neutron scattering, especially in connection with the simulation package McStas, which he developed with K. Nielsen in 1999. Prof. Lefmann has developed a network of high-power collaborations, has a very respectable publication record and his work is well cited. However, with the exception of the McStas paper, it is not easy to identify a piece of work that is clearly "his own". Many of the paper he highlights are quite famous, but are usually associated with somebody else (e.g., B. Lake, G. Aepply, D. Argyriou etc.), and the impression is that he a much-valued member of the team rather than a driver of science. His research proposal is ambitious in breadth but is rather generic in the research themes. Prof. Lefmann has close connections with ESS, especially with the spectrometer BIFROST, in which he has had a significant hand. Prof. Lefmann has a significant experience in undergraduate teaching, supervising PhD students and post-docs, and in this he has been helped by the move to Copenhagen. His funding portfolio is sizeable, and his track record of funding, especially from Danish sources, is strong. *Prof. Lefmann is certainly a candidate worth interviewing*.

13. Petronella Pascale Maria Deen

PhD 2003, Liverpool. Currently Senior Scientist, European Spallation Source, and is also adjunct associate Professorship at the Niels Bohr Institute, University of Copenhagen. She is well known in the international neutron community through her previous work as instrument scientist on D7 at the ILL and her current involvement in two ESS neutron spectroscopy instrument projects. Her highlighted publications are of high quality and reflect her strong interest for the analysis of diffuse magnetic scattering, and focus on magnetic frustration. She chose them because she clearly played a central role as either the first author or a principal collaborator. Overall, her publication record is good given her seniority. Many of her ILL paper are quite famous, although she played only a supporting role in some of them. Prof Deen does not have a strong funding track record. She has some recent experience of teaching at undergraduate level and some experience of PhD supervision. *She is clearly worth an interview, if possible*.

15. Roland Mathieu

2002 Ph.D Uppsala. Currently Senior lecturer in the Department of Engineering Sciences, Uppsala University. The applicant has a strong interest in designing, synthesizing and characterizing new materials or materials with novel magnetic and electrical properties, with an emphasis on laboratory techniques. He has a number of collaborators with whom he pursues more sophisticated measurements, including work at synchrotron and neutron facilities. His output of publications is strong, and has a good citation record. In particular, his work on phase separation on manganites is original (albeit in collaboration with well-known figures like Yoshinori Tokura) and has been well received. His current research focus is on multiferroics and nanomagnetism, and his future research vision concentrates on expanding his portfolio of growth techniques, including epitaxial growth. He has a good portfolio of grants from Swedish research councils. The candidate has some experience of student supervision, as appropriate for his seniority, and his teaching portfolio is strong. Although he would not bring to the post an element of creative development of the synchrotron and neutron techniques, he has much to offer in terms of

materials, and may be worth interviewing, taking into consideration the fact his experience in the Swedish system.

Lower Group

1.Amitesh Paul

PhD 2001 (Indore, India). Currently Akademischen Rat and Group responsible at Technische Universität München, Physik-Department, Lehrstuhl für Neutronenstreuung, Garching, Germany. The applicant's research focused on magnetic thin films with focus on oxides. Currently scientific staff at Garching. Topics are, exchange bias, interlayer exchange coupling, magnetization reversal, anisotropic properties, as well as magneto-transport properties in layered materials and layered oxide heterostructures. Neutron scattering (grazing incidence, reflectivity etc.) as main techniques. On the *positive side*, these are very well suited techniques for ESS. Publications cited as "most important" seem of good quality, and the second one is single-author, which is impressive for an experimental paper. Overall, the personal impact of this candidate does not seem great – the output is significant and clearly with a strong personal contribution but not generally in top-tier journals. The research proposal is well constructed and focused on technologically relevant materials, and is well coupled to the ESS programme. The candidate has some experience in instrumentation. The teaching experience is adequate for what is required. It is mainly of the more specialized nature (i.e., 3rd-4th-year UG or PhD). The candidate has experience in supervising graduate students.

5. David Navas Otero

PhD 2006 Madrid. Currently Researcher at the Instituto de Fisica dos Materiais da Universidade do Porto (IFIMUP-IN). Expertise in the fabrication and characterization of artificially nanostructured ferromagnetic thin films, both top-down and bottom-up. Characterisation techniques are QUID, VSM and MOKE magnetometries, MFM microscopy, Polarized Neutron Reflectivity (PNR). New research directions are towards ultra-fast dynamics through measurements of the ferromagnetic resonance. Future plans are also focused on magnetic dynamics in nanostructures, particularly coupled with optical excitations (plasmonics). Some experience with PNR but not much emphasis on X-ray/neutron sources. The candidate currently has a lead researcher profile, with good mobility experience, and would be a good asset for a research institute in his field. However, he is somewhat junior compared with other candidates. This is also reflected by his limited teaching/supervision experience, which is, however, adequate at his career level.

6. Edwin Fohtung

PhD 2010 Freiburg. Currently LANSCE Professor of Physics at Los Alamos National Laboratory (LANL) and New Mexico State University (NMSU). Expertise in coherent X-ray diffraction and the development of new methodologies, with a strong connection with magnetism. Strong teaching profile given the career stage, due to joint appointment LANL/NMSU. Very interesting research proposal, focused on novel application of synchrotron radiation – definitely an area Lund may want to consider very seriously. However, the candidate has at present only 10 publications, and, with only 6 years of post-PhD experience, is significantly junior with respect to some of the other strong candidates. May be worth a "wild card" interview.

9. Jan Dreiser

PhD 2007 ETH. Currently staff scientist (tenure track) at the X-Treme beam line at PSI, where he was post-doc. Own research seems focused on single-ion magnets on surfaces, and this was also the topic of his SNF grant. Also interested in single molecule magnets. Teaching and supervision experience is rather limited, due both to his relative lack of seniority and his affiliation with a large-scale facility. The ideas he puts forth in his cover letter are interesting, especially in the way various in-house techniques such as STM (very relevant for magnetism of ions on surfaces) is linked to the work at facilities. Overall, a good candidate but perhaps too junior for the position.

11. Martin Valldor

PhD 1999 Stockholm (inorg. Chem.). Currently a Group Leader at Max-Planck-Institut für Chemische Physik fester Stoffe Dresden. The applicant has a strong background in solid state chemistry and most on his research has focused on the synthesis and characterization of new magnetic compounds (most recently “bichalcogenides"). He masters a suite of diverse characterization techniques, but none of them seem to ‘push the boundary’ of work at large-scale facilities. There is evidence that the candidate has achieved a good degree of research independence, having been appointed as Group Leader at MPI-Dresden in 2013. He has a good teaching experience, but mostly in inorganic chemistry. He has supervised several graduate students.

14. Randy S. Fishman

PhD 1985 Princeton. Currently staff scientist at Oak Ridge National Lab. The applicant has a strong background in the interpretation of inelastic neutron scattering techniques to study magnetic oxides, and in this capacity he has collaborated with some of the best experimental groups. His recent research has been in the field of multiferroics. He is currently a member of the Oak Ridge theory group, but he has previously help positions as assistant and associate professor at North Dakota State University, so he has experience in teaching and supervising students and post-docs. His publication list is substantial and has had a good impact, although his track record of funding is not exceptional. His research proposal is interesting but somewhat lacking breadth and prospective.