REPORT:

THE FIRST MEETING OF
THE KEK SCIENCE ADVISORY COMMITTEE

March 23-24, 2019
KKR Hotel Tokyo

1. Executive Summary

The first meeting of the KEK Science Advisory Committee took place at KKR Hotel Tokyo on March 23 and 24, 2019. The program of presentations can be found in Appendix A. The membership of the SAC is provided in Appendix B. The presentations to the SAC were well-focused and informative, highlighting notable history, recent activities and plans for the future. KEK performs a diverse research program covering particle physics, nuclear physics, cosmology, materials science, and life science. KEK's achievements are very impressive on all fronts.

KEK holds a forefront scientific position with strong efforts in education, dissemination and outreach. KEK runs and develops world-leading electron-based and proton-based accelerator facilities at Tsukuba Campus and Tokai Campus, respectively. Using beams of photons, electrons, positrons, neutrinos, muons, neutrons, pions, kaons, and protons from these facilities, KEK pursues fundamental laws of nature and the origin of function of materials. More than seven thousand scientists from all over the world use KEK's cutting-edge accelerator-based facilities each year. KEK develops the next generation of accelerator technologies for a wide range of science and technology and collaborates with industry on research aimed at developing useful products. KEK also strengthens its portfolio by partnering in high-priority facilities hosted elsewhere, including LHC/ATLAS experiment at CERN, KISS at RIKEN, UCN at TRIUMF, and POLABEAR-2 at Atacama.

At this meeting, the SAC was asked to focus on the followings:

- Review the Updated KEK Roadmap, and give your comments and suggestions. Do you endorse it?
- In the KEK-PIP, our next priority is muon g-2/EDM experiment and upgrade of the J-PARC Hadron Hall, and we will begin funding discussion with the MEXT. Give your comments and suggestions.
- It is urgent for us to further activate discussions on the future light source replacing the PF/PF-AR. Review the plan given by the IMSS.
- Any remarks/suggestions/warnings/criticism on the four major research projects and research program in the four institutes will be highly appreciated.

The SAC strongly endorses KEK's decision on near-term priorities (the muon g-2/EDM experiment, the upgrade of the J-PARC Hadron Hall, and the upgrade of the Photon Factory), and the updated KEK roadmap. The KEK leadership should be congratulated for establishing outstanding near- and longer-term strategies and for producing the implementation plan. Specific comments and/or recommendations are discussed in Chapters 3 and 4.

The KEK leadership team recognizes a big gender gap in scientific and technical staff. This gap is significantly larger than that in other countries. The SAC encourages the KEK team to develop programs that could help to reduce this gap. The SAC hopes that KEK becomes an exemplary institution in this aspect.

2. Major research projects and research program in the four institutions

2.1 J-PARC

J-PARC is a unique facility supporting many fields of science research and technological projects by providing different types of particle beams produced via a primary high intensity proton beam. The facility is undergoing several upgrades and it will be crucial to balance between providing sufficient beam time for the experiments and improving the performances of the different parts of the facility devoted to the nuclear and particle physics and to material science.

The accelerator neutrino experiment T2K has discovered the transition of muon neutrino to electron neutrino and found an indication of CP violation. This is based on a 490 kW proton beam. These achievements open a possibility of detecting the neutrino CP violation, which will be one of the most important discoveries in particle physics in the coming decade. To keep a leading role in accelerator neutrino physics by reaching the goal to detect CP violation to 3σ, and to match up the future Hyper-K detector, sufficient beam time should be maintained, and the upgrade plan to increase the proton beam power to 750 kW and further to 1.3 MW should be carried out. Comparing with the investments on the Hyper-K detector, it is worthwhile to pursue goals higher than 750 kW and 1.3 MW on the beam improvement, which seems possible according to current excellent performance.

The nuclear and hadron physics program has been very successful in the recent years confirming the key player role of Japan in the study of hyper-nuclei and in the precision measurements of rare decays of neutral kaon and muon. The short-term upgrades will open opportunities, including an opportunity in the study of hot dense matter testing finite temperature QCD. In addition, the ongoing R&D for the measurement of the anomalous magnetic moment and electric dipole moment of the muon is very promising.

2.2 SuperKEKB

Together with the BABAR experiment at SLAC, the Belle experiment at KEK observed a long-awaited CP violation in the $B^0 \to J/\psi K_S$ decays in 2001, which resulted in the Nobel Prize to be awarded to Kobayashi and Maskawa in 2008. After the end of data taking in 2010 with a total luminosity of 1 ab^{-1}, the storage rings of the KEKB accelerator and the spectrometer of the Belle detector went through major upgrades, and the SuperKEKB and the Belle II were born.

The first operation of the SuperKEKB after the upgrade took place about three years ago, without the Belle II detector in place. During the second operation of the SuperKEKB one year ago, where the Belle II detector was installed together with a provisional vertex detector, the machine achieved a luminosity of 5×10^{33} $cm^{-2}s^{-1}$. The installation of the accelerator upgrades in the final focus and interaction region was completed with Phase 2 beam commissioning in 2018. During this Phase 2 period, the numerous measures were taken to suppress electron-cloud build-up (a major problem at the KEKB) and this new process is proven to be effective up to more than half the design bunch-train current.

The experiment has just started the first physics run with a nearly full Belle II detector. Although the vertex detector is equipped with one pixel layer, rather than the designed two, and some other detector components are not yet completely functional, the experiment should be able to perform physics analysis. The collaboration is fully committed to obtain some physics results for conferences in the summer 2019. It should be noted that the Belle II collaboration is a truly international collaboration, consisting of more than 900 people from 26 countries.

2.3 Photon Factory

The Photon Factory is probably the oldest major light source operating in the world today. Strategic upgrades carried out 23 and 14 years ago, together with the addition of PF-AR, have ensured it has remained relevant to generations of scientific users from Japan and throughout the world. This is evidenced by a comparatively small change of ~15% in users and an oversubscribed proposal system, despite a 40% reduction in user operating hours over the past few years. Scientific outputs (600 papers/annum) remain at a very high standard and the science that is carried is world leading in some areas. Developing industry collaborations primarily around crystallographic services is very encouraging.

A combination of ageing infrastructure and increased competition from newer facilities calls for its future plan. Further renovation and/or a complete rebuild are up for consideration as is the impact of this within the changing Japanese light source ecosystem. The PF leadership assessed the situation and produced a plan. The PF leadership is congratulated for instituting this timely evaluation.

2.4 HL-LHC

Having collaborated very successfully in experiments at CERN for many years prior to the LHC, Japan became the first non-CERN member state who joined the LHC. KEK has played significant roles in construction of the LHC accelerator, and construction and operation of the ATLAS detector. KEK scientists have been involved in high profile analyses. Recent examples include the Higgs-top coupling and SUSY searches. KEK is one of the core Japanese institutes in the ATLAS experiment providing a strong leadership and coordination.

For the High-Lum LHC, MEXT approved the Japanese contribution. KEK will provide beam separation dipole magnets. The 1st and 2nd model magnets were built and tested successfully. The next step is mass production of the magnets. Concerning the detector upgrade, the KEK team has been playing a key role in the silicon tracker, the muon detector, and the trigger system. Efforts appear to be well planned with appropriate infrastructure. The detector upgrade schedule is tight and continuous monitoring is needed.

2.5 Institute of Particle and Nuclear Studies

The Institute of Particle and Nuclear Studies (IPNS) has been leading competitive projects such as Belle II and T2K, which attract international interests and researchers. The IPNS has been also promoting many cutting-edge experiments in a variety of fields such as hyper nuclear and hadron physics, muon and kaon physics, and astro-particle physics in addition to theory and computational physics. Furthermore, the IPNS plays a very important role in ATLAS at CERN, RIBF at RIKEN with their own developed facility KISS, TUCAN at TRIUMF, and ILC, collaborating with world-wide top institutes. Bottom-up approach in a flat organization of the IPNS has been successful for promoting diverse projects with rather limited recourses.

Since many of these projects are in the production phase, stable operation of KEK and J-PARC accelerators is most important. In order to sustain the high activity and leadership of the IPNS in the future, coherent and strategic prioritization of projects and periodic reviews are necessary.

2.6 Institute of Materials Structure Science

The IMSS provides an excellent particle beam platform complex for the domestic and international scientific community. The combination of synchrotron radiation, neutron, muon, and slow positron provided by the KEK platform plays a unique role for the cutting-edge studies in the diverse fields of materials and life science. The research programs at the IMSS are well set up for full and effective utilization of the facilities, and keeping the facilities at the highest standard is critical for its success. The quality of scientific output by the IMSS is very impressive.

The shortage of staff and operational budget for the neutron and muon beamlines at the J-PARC is a critical barrier achieving the full scientific performance anticipated for the state-of-art beamlines. This requires an immediate attention, followed by a proper action. Planning for a new synchrotron radiation source to replace current sources at KEK is in progress. The position of this planned new SR source among the existing domestic and international SR sources needs to be carefully thought through to make it a key player in the coming many years.

2.7 Accelerator Laboratory

The Accelerator Laboratory (ACCL) consists of seven divisions with about 200 staff members in total. It is in charge of all KEK accelerator activities, especially J-PARC, SuperKEKB, e+/e- linacs, PF, PF-AR, cERL, ILC R&D and accelerator theory. Over the past years the ACCL accomplished several important milestones: (1) the completion of the SuperKEKB construction and a promising rapid start of the phase 3 beam commissioning; (2) establishing the routine e+/e- linac operation for injection into four rings, with varying bunch charge and energy pulse by pulse; (3) the demonstration of the design beam power of 1 MW in the J-PARC RCS; (4) a world record slow extraction efficiency better than 99.5% from the MR; (5) the definition of a clear J-PARC roadmap to achieve 750 kW in fast extraction by 2022 and 1.3 MW by 2028; (6) the introduction of full-energy top-up injection at PF-AR; and (7) the development of a PF upgrade plan based on a new low-emittance optics.

On 1 April 2019, the ACCL will be reorganized so as to include a new center for applied SC accelerators, while the number of divisions will be reduced to six. The ACCL personnel is fully committed, without any margin or any free resources. The SAC is concerned that the retiring rate (11 ACCL scientists and two engineers in March 2019, corresponding to more than 6% of the total staff) significantly exceeds the recruitment rate of new staff (three per year). Maintaining key accelerator expertise and preserving a critical number of competent and dynamic experts will be important for accomplishing the challenging performance goals set for the next ten years.

2.8 Applied Research Laboratory

The Applied Research Laboratory (ARL) consists of four centers totaling about 80 staff members: Radiation Science, Computing Research, Cryogenics Science, and Mechanical Engineering. The ARL provides technical support to KEK on radiation activity management, supercomputing and IT services, cryogen supply and cryogenic system operations, and mechanical construction and engineering. The ARL also conducts research and development activities including radiation transport codes development, grid technology, multi-core CPU computing, DAQ development, and superconducting magnet for future projects.

It is highly appropriate that the ARL provides technical support while each individual project team takes ownership and responsibility in radiation safety including hazard analysis, mitigation, and personnel training. Centralizing services like radiation transport calculation, computation and IT, controls, cryogenics, mechanical and electrical engineering offers the advantage of conformance to established standards and regulations, quality assurance, and work efficiency. On the other hand, design and construction of a complex device requires tight integration and interface. For example, design and fabrication of superconducting RF cryomodules requires close integration of SRF, cryogenics, and mechanical engineering. Close coordination and corporation between different KEK laboratories are needed, which can both be highly rewarding and challenging.

3. Recommendations on Updated KEK Roadmap

3.1 Particle and Nuclear Physics

A "Higgs Factory" capable of precision studies of the Higgs boson, such as the ILC, is strongly endorsed by the international high energy physics community. Japanese physicists have been playing a leading role in linear-collider R&D for the past 30 years. Their contributions were essential for reaching today's level of technical maturity. KEK is well positioned to lead the effort for realizing the ILC hosted in Japan as an international project in collaboration with the worldwide HEP community.

KEK is a leading member of the large Japanese experimental group in ATLAS at CERN, and contributed to the array of important physics analyses, software and hardware developments. Its mission, as well as the participation of the high luminosity upgrade, should be strongly supported.

The SuperKEKB accelerator has just begun it Phase 3 operation with successful collisions, and the record high luminosity in the collider history is expected to reach in the next years to come. The Belle II experiment will study the decays of B mesons and tau leptons to unprecedented precisions, and will reach a tremendous sensitivity to probe new physics beyond the Standard Model in the flavor sector. J-PARC has been prolific and a variety of experiments on flavor physics, neutrino physics, hadron physics and nuclear physics is being successfully carried out.

There are vibrant activities taking place at the KEK Theory Center, including healthy publications, organizing topical workshops, hosting visitors, and training a large number of postdocs and students. Topics covered at the Theory Center include particle physics phenomenology, nuclear physics, hadron physics and lattice QCD, astro-physics and cosmology, as well as formal physics of string and quantum field theory. At the flagship lab with world-leading experimental endeavor, interactions and mutual supports between the theory center and experimental groups should be further strengthened

The Computation Division at KEK takes on the challenge and performs well. While entering the "Big Data" era, new challenges and opportunities may emerge. Beyond the routine computation needs at KEK, it would be prudent for KEK to make a systematic effort to systematically engage the new issues such as deep learning.

3.2 Material structure science and structural biology

We applaud the demand for and productivity of the KEK programs at both PF and MLF (J-PARC). There is clear scientific excellence across the materials science and structural biology portfolio, as well as strong examples of industrial relevance. At the next meeting, we would like KEK to clarify where believes it holds, or could hold, a leadership position in materials science or structural biology.

We commend the idea of developing a matrix of instrumentation at the PF. The same approach might well succeed across the whole neutron and muon instruments at J-PARC (including the JAEA and CROSS instruments). But it is difficult to be science-driven, with the present level of resourcing, and without being embedded in a broader multi-purpose laboratory (like HZB, CEA/CNRS in France or the DOE labs in the USA). It would therefore be worth benchmarking KEK's approach against similar user-focused institutes.

KEK performs industrial research. Its significant role in industry and society demonstrates an important, but often unseen, impact on our everyday lives. It could also bring revenue, resulting in increase of the beam time in the future.

The national landscape has become very different now for synchrotrons and the other quantum beam probes. KEK/J-PARC has a leadership/monopoly position for neutrons, muons and positrons, whereas it has to compete with SPring-8, and in the future with SLIT-J, in synchrotron science.

3.3 Accelerator development

The SAC commends the creation of a new center for applied SC accelerators, which will leverage the existing cERL and STF infrastructures, in a consortium with industry and partners, for various important societal applications (medical radioisotope production, miniaturization of semiconductor devices, etc.). The SAC notes that the planned continued advancement of superconducting RF technology and of improved systems for high-power RF generation will be important not only for the ILC, but also for any future large accelerator project.

Accelerator expertise and infrastructure have been accumulated over decades with successful design, construction and operation of the TRISTAN and the KEKB. They have been and will be key to the success of KEK. The SAC notes that core accelerator experts who worked on the TRISTAN and the KEKB have already retired or will soon retire, long before SuperKEKB is pushed to its peak performance. KEK succession planning and recruitment policy should anticipate the retirements of essential personnel such that accelerator expertise will be transmitted to the next generation of personnel at KEK. Part of the aging accelerator infrastructure at KEK requires consolidation to ensure a high beam availability for stable SuperKEKB and PF/PF-AR operation over the coming decade(s). A comprehensive risk analysis would guide the prioritization and allocation of funds with a limited spending profile.

A roadmap for subject matter expert growth and infrastructure build-up could be essential for KEK's strategic planning. For example, a major undertaking like the ILC may require a team of several hundreds of experts to conduct design, prototyping, and construction. In-house infrastructure for some critical steps is likely necessary, as shown by other projects (e.g. mass assembly of cryomodule for the X-FEL in Europe, and SRF cavity final processing and cryomodule assembly for FRIB at Michigan State University). Such build-ups of expertise and infrastructure may take 5 to 10 years. The SAC encourages KEK to include this aspect in its strategic roadmap. The in-house plant to develop mass production techniques for SRF cavity fabrication is an excellent step in this direction.

The small but strong accelerator theory group is almost unique in the world nowadays. Its efforts will be essential for the success of the ongoing and future accelerator projects. For a world-leading accelerator institute like KEK, it is important to reserve some capacity to work beyond routinely planned scope and to support the accelerator R&D for future projects. A long-term perspective might also help attract bright young scientists.

4. Recommendations on the next steps

4.1 Muon g-2/EDM

The SAC recommends that KEK moves forward with the muon g-2/EDM project at J-PARC. The experiment has the goal to measure the muon's magnetic moment anomaly and the electric dipole moment with ultra-high precision with a novel approach compared to previous muon g-2 experiments. It makes use of a high-quality muon beam with small transverse emittance, obtained from the acceleration of a source of polarized thermal muons, which will be stored in a ring of smaller diameter. This is an important measurement since the present result is not in complete agreement with the Standard Model. It also involves a wide field of novel expertise and developments ranging from material science for an efficient Muonium production target, laser physics for its ionization and accelerator physics for muon acceleration. These muons open themselves unique opportunities in other research fields because they can be used to develop a muon microscope for material and life science research.

The development and operation of an efficient Muonium source and of a long-term stable and powerful laser system to generate Lyman-alpha light for the photoionization of thermal Muonium is crucial for a successful experiment since the uncertainty of the measurement of the muon magnetic anomaly is dominated by statistics. Important progress has been made in the past years in the development and operation of the laser system, yet it appears that there are remaining issues concerning laser reliability and achievable intensity. The SAC is pleased to hear that various alternative solutions concerning the generation of thermal muons are being worked out in detail. The performance and the availability of a key ceramic optical component of the laser system should be demonstrated.

4.2 J-PARC Hadron Hall extension

The J-PARC Hadron Hall extension is an important upgrade with the goal to expand the unique capability in nuclear and hadron physics and thus to enhance further the leadership of Japan in this sector. New and well-focused experiments are planned addressing open questions concerning nuclear structure with strangeness, hot dense nuclear matter and the search of flavor changing rare processes. The world-wide position of the foreseen experimental program is unique either for the chosen experimental approach and/or for the different timeline of similar experiments from the competitors. These aspects have to be kept in mind in the specific construction planning of the Hadron Hall extension.

The activity in the recent past at J-PARC in the area of nuclear and hadron physics is marked by excellent results that were possible thanks to the intensity and quality of the secondary beams. These results constitute a very solid basis and give strong motivation to new and more challenging investigations to explore new directions as that of multi strangeness, of the hot compress matter and to reach higher sensitivity for the search of flavor changing rare processes. Improved experimental conditions and more beam time are needed for the next achievements.

After being included in the KEK-PIP in 2016 as project that needs new funding, the Hadron Hall extension project has progressed in producing detailed construction planning to optimize the beam conditions for the physics goals and in defining the different phases for the project implementation. The redefinition of the project in order to realize it in phases has been very positive taking into account the present budgetary condition. Within this framework the clarification of the near-term schedule and priority, including the MR power upgrade, a new HD target, the high-p beam line and COMET phase 1, has been an important step for laying down the longer-term planning.

At the present conditions, the SAC endorses the proposal to start first with the realization of the high intensity high resolution pion beam project. This will allow, thanks to its uniquely high energy resolution of the beam, performing super precision spectroscopy of hypernuclei and will assure the lead of Japan in the study of strangeness in nuclei for aspects related to nuclear structure and interactions. The collaboration with RCNP and RIKEN should also be reinforced further in the next years and a constant dialog with the theory groups addressing this physics should also be undertaken.

For the other components of Hadron Hall extension beyond the phase 1, all of them are recognized to have high scientific validity, and the necessary R&D and the design towards the possible accommodation (in particular KOTO 2) in the first phase should be investigated.

4.3 Future light source

It is clear that there is a very loyal user base and managing them through focused workshops, surveys etc. would be helpful. Extensive consultation with the user community is critical to any future strategy. What do they want in the short, medium and long term? This would form the basis of a “science case” from which a technical case around machine considerations would naturally evolve.

Where will new users come from and what will they expect from a light source? It is clear that new science at light sources may not always require the brightest and most coherent sources. Rather, as was highlighted in the presentations, there is room for a range of facilities. The PF is well placed to make this evaluation and, based on it, deliver what is needed. It needs to prioritize its areas to develop.

The industry program represents more than an income stream. It is a tool for engaging new users and enhances community outreach. It also highlights to funders a return on investment that is tangible to the community. With this in mind the PF should review its partnership program and extend it to other areas of science. From a purely financial perspective this will offset the reliance of additional income from its crystallography service business.

Multi beamline access at light source facilities is increasing worldwide as a result of demands of multidisciplinary large-scale scientific projects. The PF represents a comparatively large user base within KEK and as such multi beamline access could take on a unique dimension. The KEK quantum beam platform represents an exceptional worldwide opportunity. Synergies between the photon and neutron beam user base might be a good starting point and novice users should be encouraged through a targeted education program and elements of a linked proposal system.

5. Topics at the next SAC meeting

The SAC encourages the KEK team to further develop the strategy for future light source facilities at KEK. The SAC looks forward to a presentation on this development at the next SAC meeting.

The SAC would also like to hear about KEK's current and future leadership roles in materials science and structural biology.

The budgetary condition has been a continuous challenge and it has impacted the available operation time of the accelerator facilities. The SAC looks forward to a presentation on KEK's prioritization-making and decision-making process and on a coherent plan at J-PARC at the next SAC meeting. A graph showing ongoing and future project/program profiles (budget and human resources) over the next decade will be helpful for the SAC to understand the overall picture of current activities and future plans.

In addition, the SAC would like to hear about the staffing plan for accelerator experts at the next SAC meeting.

Appendix A: Agenda of the First Science Advisory Committee Meeting

The First KEK Science Advisory Committee

- Agenda (Tentative) -

Date; March 23 -24, 2019

Venue; KKR Hotel Tokyo (Ohtemachi 1-4-1, Chiyodaku Tokyo)

The "Tancho-no-ma" meeting room of 11th floor

Saturday, 23 March, 2019

9:00 - 9:40	(40)	Executive session	
9:40 - 10:00	(20)	Welcome and Introduction	Masanori Yamauchi (Director General)
10:00 - 10:30	(30)	Research program over view	Yasuhiro Okada (Executive Director)
10:30 - 10:50	(20)	(Break)	

Session I Research projects

10:50 - 11:20	(30)	J-PARC I (Particle and nuclear physics)	Toshiyuki Takahashi (Associate Professor, IPNS)
11:20 - 11:50	(30)	J-PARC II (Material science)	Hideki Seto (Professor, IMSS)
11:50 - 12:20	(30)	SuperKEKB and Belle II	Yutaka Ushiroda (Professor, IPNS)
12:20 - 12:50	(30)	PF and PF-AR	Shinichi Adachi (Professor, IMSS)
12:50 - 14:00	(70)	(Lunch)	
14:00 - 14:20	(20)	HL-LHC and ATLAS upgrade	Kazunori Hanagaki (Professor, IPNS)
14:20 - 14:40	(20)	Applied accelerator project	Seiya Yamaguchi (Director, ACCL)

Session II Research at the four institutions

14:40 - 15:20	(40)	Institute of Particle and Nuclear Studies	Katsuo Tokushuku (Director, IPNS)
15:20 - 16:00	(40)	Institute of Materials Structure Science	Nobuhiro Kosugi (Director, IMSS)
16:00 - 16:20	(20)	(Break)	
16:20 - 17:00	(40)	Accelerator Laboratory	Seiya Yamaguchi (Director, ACCL)
17:00 - 17:40	(30)	Applied Research Laboratory	Shinichi Sasaki (Director, ARL)
17:40 - 18:30	(50)	Executive Session	
18:30 -		RECEPTION	

Sunday, 24 March, 2019

Session III Future of KEK

9:00 - 9:30	(30)	KEK Roadmap update	Yasuhiro Okada (Executive Director)
9:30 - 10:00	(30)	International Linear Collider	Shinichiro Michizono (Professor, ACCL)
10:00 - 10:30	(30)	Future light source facility	Shinichi Adachi (Professor, IMSS)
10:30 - 11:00	(30)	(Break)	
11:00 - 11:30	(30)	Status of HyperKamiokande	Takashi Kobayashi (Professor, IPNS)
11:30 - 12:00	(30)	Upgrade of Hadron hall at J-PARC	Takeshi Komatsubara (Professor, IPNS)
12:00 - 12:30	(30)	Muon g-2/EDM	Tsutomu Mibe (Associate Professor, IPNS)
12:30 - 13:30	(60)	(Lunch)	
13:30 - 15:30	(120)	Executive session	
15:30		Adjourn	

* IPNS; Institute of Particle and Nuclear Studies, IMSS; Institute of Materials Structure Science, ACCL; Accelerator Laboratory, ARL; Applied Research Laboratory.

Appendix B: Members of the Science Advisory Committee

KEK Science Advisory Committee

Field	Name	Affiliation
HEP	Young-Kee Kim	University of Chicago
	Jun Cao	Institute of High Energy Physics, Chinese Academy of Science
	Tatsuya Nakada	EPFL, Ecole polytechnique fédérale de Lausanne
Theory	Tao Han	University of Pittsburgh
Nuclear	Takashi Nakano	Osaka University
	Angela Bracco	INFN, Istituto Nazionale di Fisica Nucleare
Accelerator	Frank Zimmermann	CERN, European Organization for Nuclear Research
	Jie Wei	Michigan State University
PF (Synchrotron Radiation)	Caterina Biscari	ALBA Synchrotron
	Robert Norman Lamb	CLS, Canadian Light Source
Neutron	Robert Alan Robinson	University of Wollongong, Australia (retired, ex ANSTO)
	Sung-Min Choi	KAIST, Korea Advanced Institute of Science and Technology
Muon	Elvezio Morenzoni	PSI, Paul Scherrer Institute