American Nuclear Society
Accelerator Applications Division

IAEA 60 Years
Atoms for Peace and Development

AccApp '17

13th International Topical Meeting on Nuclear Applications of Accelerators

The Expanding Universe of Accelerator Applications
L'expansion de l'univers des applications d'accélérateurs

Official Program

July 31-August 4, 2017
Hilton Québec
Québec City, Québec, Canada

Christian Segebade

75 years

This Festschrift is dedicated to Christian Segebade, who is turning 75 in August 2017. Christian's role in development of Photon Activation Analysis is hard to overestimate and his accomplishments are legendary among his students and colleagues. Being in analytical science for over 50 years, Christian has left a remarkable legacy to all of us. Please join us at the Opening Plenary.

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American Nuclear Society
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Our most sincere thanks to our other sponsors for their support of the 13th International Topical Meeting on Nuclear Applications of Accelerators (AccApp 2017)

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PLENARY, SPECIAL SESSIONS & EVENTS

ACC APP 2017 TECHNICAL SESSIONS

ADDITIONAL

Meeting Officials

AccApp 2017

13th International Topical Meeting on Nuclear Applications of Accelerators

GENERAL CHAIR
Prof. Philip L. Cole
Lamar University

GENERAL CO-CHAIR & PUBLICATIONS CHAIR
Prof. Adriaan Buijs
McMaster University

CANADIAN NUCLEAR SOCIETY LIAISON
Benjamin Rouben, Ph.D., FCNS
Canadian Nuclear Society

TECHNICAL PROGRAM CHAIR
Dr. Aliz Simon
International Atomic Energy Agency (IAEA)

TECHNICAL PROGRAM CO-CHAIR
Prof. Andrei Afanasev
George Washington University

TECHNICAL PROGRAM CO-CHAIR
Dr. Blair Bromley
Canadian Nuclear Society

Welcome,

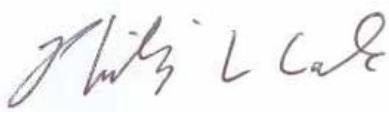
AccApp'17 is the thirteenth international topical meeting on the applications of accelerators; it is being organized by the Accelerator Applications Division of the American Nuclear Society (ANS) and the Canadian Nuclear Society (CNS). AccApp'17 will be held at the Hilton Québec Hotel, in Québec City, Québec, Canada July 31-August 4, 2017.

The purpose of these topical AccApp meetings is to provide an international forum for discussing the various applications of particle accelerators.

Meetings are focused on the production and utilization of accelerator-produced neutrons, photons, electrons and other particles for scientific and industrial purposes; production or destruction of radionuclides significant for energy, medicine, defense, or other endeavors; safety and security applications; medical imaging, diagnostics, and therapeutic treatment.

One of the great strengths of the AccApp meetings is the dissemination of knowledge on the diverse applications of accelerators. The conference provides an opportunity for nuclear physicists, accelerator physicists, nuclear engineers, and other experts in the international community to meet and discuss their research face-to-face. These interactions can help establish good working relationships and collaborations to solve common problems across multiple disciplines. Also, old friendships can be cultivated and new ones established.

We are looking forward to seeing you in la belle ville de Québec!



Philip Cole (pcole@lamar.edu)
General Chair of AccApp'17

Adriaan Buijs
General Co-Chair of AccApp'17

Schedule at a Glance

Sunday, July 30

1:00–6:00 pm	Registration
1:00–3:00 pm	Exhibitor Set-Up
6:00–8:00 pm	Reception in Exhibit Hall

Monday, July 31

7:00 am–5:00 pm	Registration
8:00–9:00 am	Continental Breakfast in Exhibit Hall *Sponsored by* Muons, Inc
9:00–11:30 am	Opening Plenary
10:30–10:45 am	Coffee Break
11:30 am–1:00 pm	Lunch in Exhibit Hall
1:00–3:05 pm	Technical Sessions
3:05–3:20 pm	Coffee Break
3:20–5:50 pm	Technical Sessions

Tuesday, August 1

7:00 am–5:00 pm	Registration
8:00–8:30 am	Continental Breakfast in Exhibit Hall
8:30–11:45 am	Plenary II
10:00–10:15 am	Coffee Break
11:45 am–1:00 pm	Lunch in Exhibit Hall
1:00–3:05 pm	Technical Sessions
3:05–3:20 pm	Coffee Break
3:20–5:50 pm	Technical Sessions

Wednesday, August 2

7:00 am–6:00 pm	Registration
8:00–9:00 am	Continental Breakfast
9:00–11:30 am	Plenary III
10:30–10:45 am	Coffee Break
11:30 am–1:00 pm	Lunch
1:00–3:05 pm	Technical Sessions
3:05–3:20 pm	Coffee Break
3:20–5:50 pm	Technical Sessions
6:30–8:30 pm	Poster Session/Reception

Thursday, August 3

7:00 am–5:00 pm	Registration
8:00–9:00 am	Continental Breakfast
9:00–11:30 am	Plenary IV
10:30–10:45 am	Coffee Break
11:30 am–1:00 pm	Lunch
1:00–3:05 pm	Technical Sessions
3:05–3:20 pm	Coffee Break
3:20–5:50 pm	Technical Sessions

Friday, August 4

8:00–9:00 am	Continental Breakfast
9:00–11:00 am	Closing Plenary

Daily Schedule

Sunday, July 30

1:00–6:00 pm	Registration	Grande Place
1:00–3:00 pm	Exhibitor Set-Up	Grande Place
6:00–8:00 pm	Reception in Exhibit Hall	Grande Place

Monday, July 31

7:00 am–5:00 pm	Registration	Grande Place
8:00–9:00 am	Continental Breakfast in Exhibit Hall *Sponsored by* Muons, Inc	Grande Place
9:00–11:30 am	Opening Plenary	Palais
10:30–10:45 am	Coffee Break	Grande Place
11:30 am–1:00 pm	Lunch in Exhibit Hall	Grande Place
1:00–3:05 pm	Technical Sessions	
	• Accelerator Design and Technology—I	Palais
	• Accelerator Facilities—I	St. Louis
	• Materials—I	Beauport
3:05–3:20 pm	Coffee Break	Grande Place
3:20–5:50 pm	Technical Sessions	
	• Accelerator Design and Technology—II	Palais
	• Accelerator Facilities—II	St. Louis
	• Materials—II	Beauport

Daily Schedule

Tuesday, August 1

7:00 am–5:00 pm	Registration	Grande Place
8:00–8:30 am	Continental Breakfast in Exhibit Hall	Grande Place
8:30–11:45 am	Plenary II	Palais
10:00–10:15 am	Coffee Break	Grande Place
11:45 am–1:00 pm	Lunch in Exhibit Hall	Grande Place
1:00–3:05 pm	Technical Sessions	
	• Accelerator Design and Technology—III	Palais
	• Accelerators for Monitoring the Environment—I	St. Louis
	• Radioisotopes—I	Beauport
	• Materials—III	Beaumont/Belair
3:05–3:20 pm	Coffee Break	Grande Place
3:20–5:50 pm	Technical Sessions	
	• Accelerator Design and Technology—IV	Palais
	• Accelerators for Monitoring the Environment—II	St. Louis
	• Radioisotopes—II	Beauport
	• Industrial Applications—I	Beaumont/Belair

Wednesday, August 2

7:00 am–6:00 pm	Registration	Grande Place
8:00–9:00 am	Continental Breakfast	Grande Place
9:00–11:30 am	Plenary III	Palais
10:30–10:45 am	Coffee Break	Grande Place
11:30 am–1:00 pm	Lunch	Grande Place
1:00–3:05 pm	Technical Sessions	
	• Accelerator-Driven Systems—I	Palais
	• High-Power Accelerators and High-Power Spallation Targets—I	St. Louis
	• Radioisotopes—III	Beauport
3:05–3:20 pm	Coffee Break	Grande Place
3:20–5:50 pm	Technical Sessions	
	• Accelerator-Driven Systems—II	Palais
	• Industrial Applications—II	St. Louis
	• Radioisotopes—IV	Beauport
6:30–8:30 pm	Poster Session/Reception	Grande Place

Daily Schedule

Thursday, August 3

7:00 am–5:00 pm	Registration	Grande Place
8:00–9:00 am	Continental Breakfast	
9:00–11:30 am	Plenary IV	Palais
10:30–10:45 am	Coffee Break	Grande Place
11:30 am–1:00 pm	Lunch	Grande Place
1:00–3:05 pm	Technical Sessions	
	• Accelerators in Life Sciences—I	Palais
	• Nuclear Data—I	St. Louis
	• High-Power Accelerators and High-Power Spallation Targets—II	Beauport
3:05–3:20 pm	Coffee Break	Grande Place
3:20–5:50 pm	Technical Sessions	
	• Accelerators in Life Sciences—II	Palais
	• Nuclear Data—II	St. Louis
	• High-Power Accelerators and High-Power Spallation Targets—III	Beauport

Friday, August 4

8:00–9:00 am	Continental Breakfast	Grande Place
9:00–11:00 am	Closing Plenary	Grande Place

General Information

WIFI

Complimentary WiFi access is offered in all guest rooms and public areas. Premium WiFi with greater downloading capacity is also available for $9.95 per day.

REGISTRATION

Meeting registration is required for all attendees and speakers. Badges are required for admission to all plenaries, technical sessions and events.

REGISTRATION HOURS

Sunday, July 30	1:00–6:00 pm
Monday, July 31	7:00 am–5:00 pm
Tuesday, August 1	7:00 am–5:00 pm
Wednesday, August 2	7:00 am–6:00 pm
Thursday, August 3	7:00 am–5:00 pm

ATTENDEE MEAL FUNCTIONS

Breakfast and Breaks will be provided to all registered meeting attendees, Monday–Thursday.

Lunch will be provided to all registered meeting attendees, Monday-Thursday.
**Please note: Lunch is a ticketed event. Your badge is required for entry to these events.
Additional tickets are available for purchase.

Opening Reception: Your badge is required for this event. Heavy hors d'oeuvres and open bar are included with a full meeting registration.

Tickets for lunches and receptions are available for purchase for guests.

General Information

ABOUT ANS

Mission

ANS provides its members with opportunities for professional development. It also serves the nuclear community by creating a forum for sharing information and advancements in technology, and by engaging the public and policymakers through communication outreach.

Code of Ethics

Recognizing the profound importance of nuclear science and technology in affecting the quality of life throughout the world, members of the American Nuclear Society (ANS) are committed to the highest ethical and professional conduct.

ANS members as professionals are dedicated to improving the understanding of nuclear science and technology, appropriate applications, and potential consequences of their use.

To that end, ANS members uphold and advance the integrity and honor of their professions by using their knowledge and skill for the enhancement of human welfare and the environment; being honest and impartial; serving with fidelity the public, their employers, and their clients; and striving to continuously improve the competence and prestige of their various professions. The Code of Ethics can be found at www.ans.org/about/coe.

Statement on Diversity

The American Nuclear Society (ANS) is committed, in principle and in practice, to creating a diverse and welcoming environment for everyone interested in nuclear science and technology. Diversity means creating an environment–both in ANS and in the profession–in which all members are valued equitably for their skills and abilities and respected equally for their unique perspectives and experiences. Diverse backgrounds foster unique contributions and capabilities, and so creation of an inclusive Society ultimately leads to a more creative, effective, and technically respected Society.

ANS believes that everyone deserves opportunities for learning, networking, leadership, training, recognition, volunteering in Society activities, and all the other benefits that involvement in the Society brings, regardless of age, color, creed, disability, ethnicity, gender identity and expression, marital status, military service status, national origin, parental status, physical appearance, race, religion, sex, or sexual orientation. The selection of a member to serve in ANS's volunteer leadership structure shall be based solely on the member's ability, interest and commitment to serve. In particular, ANS encourages members at each level of the Society and in each Professional Division and Technical Group to make special efforts to recruit underrepresented minorities and women to ensure that they are adequately represented in the Society.

Respectful Behavior Policy (Abbreviated)

The open exchange of ideas, freedom of thought and expression, and productive scientific debate are central to the mission of the American Nuclear Society (ANS). These require an open and diverse environment that is built on dignity and mutual respect for all participants and ANS staff members, and is free of bias and intimidation.

ANS is dedicated to providing a safe, welcoming, and productive experience for everyone participating in Society events and other Society activities regardless of age, color, creed, disability, ethnicity, gender identity and expression, marital status, military service status, national origin, parental status, physical appearance, race, religion, sex, or sexual orientation. Creation of a safe and welcoming environment is a shared responsibility held by all participants. Therefore, ANS will not tolerate harassment of or by participants (including ANS volunteer leaders and staff members) in any form. Disciplinary action for participants found to have violated this principle may include reprimand, expulsion from an event or activity with or without a refund, temporary or permanent exclusion from all ANS events and activities, suspension or expulsion from volunteer leadership positions or groups, and/or suspension or expulsion from Society membership, as appropriate.

The complete Respectful Behavior Policy can be found at www.ans.org/about/rbp. If you have questions about the policy, please contact ANS Executive Director Robert C. Fine at 708-579-8200 or *rfine@ans.org*.

Plenary, Special Sessions & Events

SUNDAY, JULY 30

Opening Reception
Location: Grande Place **Time:** 6:00 –8:00 pm

MONDAY, JULY 31

Opening Plenary
Chair: Philip Cole *(Lamar Univ)*
Location: Palais **Time:** 9:00–11:30 am

9:00 am: The Nuclear Physics of Photon Activation Analysis and Why it Matters, D. P. Wells *(New Mexico Tech)*, invited

9:45 am: Review of Photon Activaton Analysis and Its Applications on Environmental, Geological, Biological, and Forensic Sciences, M. Mamtimin *(Niowave, Inc.)*, P. L. Cole *(Lamar Univ)*, invited

10:45 am: Photon Activation Analysis: Past, Present, and Future, Chr. Segebade *(Akdeniz Univ)*, invited

Coffee
Location: Grande Place **Time:** 10:30–10:45 am

TUESDAY, AUGUST 1

Plenary II
Chair: Benjamin Rouben *(12 & 1 Consulting)*
Location: Palais **Time:** 8:30–11:45 am

8:30 am: Status and Prospects of TRIUMF, O. Kester *(TRIUMF)*, invited

9:15 am: Low Energy Accelerator Production of Isotopes for Medical Imaging, S. E. Lapi *(Univ of Alabama at Birmingham)*, invited

10:15 am: Isotope Production with Electron Accelerators and Accelerator-Driven Systems, V. N. Starovoitova, S. S. Barnard, C. H. Boulware, A. K. Grimm, T. L. Grimm, J. L. Hollister, N. C. Johnson, M. Mamtimin, F. Y. Odeh, K. A. Shannon *(Niowave Inc.)*, invited

11:00 am: Regulatory Oversight of Rapidly Changing Technology, C. Moses, M. Broeders *(Canadian Nucl Safety Comm)*

Coffee
Location: Grande Place **Time:** 10:00–10:15 am

WEDNESDAY, AUGUST 2

Plenary III
Chair: Adriaan Buijs *(McMaster Univ)*
Location: Palais **Time:** 9:00–11:30 am

9:00 am: ADANES 2017, Wenlong Zhan *(CAS)*, ADANES Group, invited

9:45 am: Status of the MYRRHA Project, C. Angulo, H. Aït, Abderrahim, P. Baeten *(SCK/CEN)*, J.-L. Biarrote *(CNRS/IN2P3)*, P. Deboodt, J. Engelen, R. Fernandex,*(SCK/CEN)*, H. Podlech *(IAP)*, L. Popescu, P. Rodeghiero, D. Vandeplassche *(SCK/CEN)*, invited

10:45 am: Design of High Power Proton Accelerators, Valeri Lebedev *(Fermilab)*, invited

Coffee
Location: Grande Place **Time:** 10:30–10:45 am

Plenary, Special Sessions & Events

WEDNESDAY, AUGUST 2 CONTINUED

Poster Session and Reception

Cochairs: Adriaan Buijs *(McMaster Univ)*, Philip Cole *(Lamar Univ)*
Location: Grande Place **Time:** 6:30–8:30 pm

1. Status of Sumitomo's Superconducting Isochronous Cyclotron Development for Proton Therapy, H. Tsutsui, Y. Aoki, Y. Arakawa, Y. Ebara, A. Hashimoto, A. Higuchi, N. Kamiguchi, T. Kato, H. Kitami, Y. Mikami, H. Mitsubori, T. Morie, H. Murata, H. Ookubo, T. Sakemi, N. Takahashi, K. Taki, T. Tsurudome, J. Yoshida, Y. Kumata *(Sumitomo Heavy Industries, Ltd.)*

2. MCNPX- Based Model of Dual-Head Gantry System with 6 MV Linear Accelerator, Su Chul Han, Young Hoon Ji, Seungwoo Park *(Korea Inst of Radiological and Medical Sciences)*

3. Verification of a Correlated Energy Straggling, Angular Scattering Model for Heavy Charged Particles in MCNP6.2, K. Zieb *(RPI)*, H. G. Hughes *(LANL)*, X. G. Xu *(RPI)*

4. Validation of Multi-Physics Coupling to Model a RbCl-RbCl-Ga Target Stack, E. M. O'Brien *(LANL/NCSU)*, J. M. Doster *(NCSU)*, F. M. Nortier, J. W. Engle, E. R. Olivas *(LANL)*, M. H. Stokely *(NCSU/BTI Targetry)*, J. Peeples *(BTI Targetry)*, I. A. Bolotnov *(NCSU)*

5. Neutron Transmission Measurements and Resonance Analysis of Mo-96, J. W. Brown *(RPI)*, D. P. Barry, G. Leinweber, M. J. Rapp, B. Epping *(KAPL)*, N. W. Thompson, A. Youmans *(RPI)*, R. Bahran *(LANL)*, Y. Danon *(RPI)*

6. Tunable Irradiation Testbed, D. Wootan, A. Casella, D. Senor, D. Asner *(PNNL)*

7. Solid Target Developments at the Bern Cyclotron Laboratory, T. S. Carzaniga, M.Auger, S. Braccini, A. Ereditato, K. P. Nesteruk *(Univ of Bern)*, P. Scampoli *(Univ of Bern/Univ of Naples Federico II)*, A. Tüerler *(Univ of Bern/PSI)*, N. van der Meulen *(PSI)*

8. Thin Film Coated SRF Cavity R&D Activity at Institute of Modern Physics *(IMP)*, T. Tan, S. C. Huang, F. Pan, Y. He, H. W. Zhao *(CAS)*

9. Radiation Shielding Analysis for the A-BNCT Facility, Eunjoong Lee *(KAIST)*, Cheolwoo Lee, Young-Ouk Lee *(KAERI)*

10. Level of Trace Elements in Human Teeth from Two Low Income Communities Using IBA, M. E. M. Eisa *(Sudan Univ of Science & Technology)*, C. A. Pineda *(Cape Pennisula Univ)*, A. L. Rodgers, S. Naidoo *(Univ of Western Cape)*

11. Design of LBE Spallation Target for ADS Target Test Facility (TEF-T) in J-PARC, Shigeru Saito, Hironari Obayashi, Tao Wan, Nariaki Okubo, Takanori Sugawara, Shinya Endo, Toshinobu Sasa *(JAEA)*

12. Production of Intense ^{11}C Beams for PET-Aided Hadron Therapy, S. Stegemann, T. E. Cocolios *(KU Leuven)*, T. Stora *(CERN)*

13. Thorium-232 Fission Induced by Light Charged Particles up to 70 MeV, C. Duchemin, A. Guertin *(SUBATECH)*, F. Haddad *(SUBATECH/GIP ARRONAX)*, N. Michel *(GIP ARRONAX)*, V. Métivier *(SUBATECH)*

14. ***CANCELLED:*** Spontaneous Micronuclei Formation in Persons Living in Sri Lanka in Close Proximity to a Nuclear Power Plant in India, T. Weerakkody *(Sri Lanka Atomic Energy Board)*, D.T .D. Warnakulasuriya, S. Williams, M. D. Dabarera, B. K. S. K. Rodrigo *(Univ of Kelaniya)*, V. Waduge *(Sri Lanka Atomic Energy Board)*, A. R. Wickremasinghe *(Univ of Kelaniya)*

15. METU-Defocusing Beam Line Project and Beam Optics Studies, A. Gencer, M. B. Demirköz *(Middle East Technical Univ)*, I. Efthymiopoulos *(CERN)*, M. Yiğitoğlu, B. Bodur, D. Veske *(Middle East Technical Univ)*

16. Determination of Secondary Neutron Field at the Massive Uranium Target Irradiated by 660 MeV Proton Beam, M. Zeman *(Brno Univ of Technology/JINR)*, J. Adam *(JINR/Nuclear Physics Inst of the ASCR)*, K. Katovsky *(Brno Univ of Technology)*, S. I. Tyutyunnikov *(JINR)*, J. Vrzalova *(JINR/Nuclear Physics Inst of the ASCR/Czech Technical Univ in Prague)*, L. Zavorka *(JINR/Czech Technical Univ in Prague)*

17. Detection Efficiency of the ESS Target Imaging System: Monte Carlo Simulations, N. Borghi, E. Klinkby, B. Lauritzen *(DTU)*, L. Zanini *(ESS)*

18. Optimizing 3D Printed Accelerator-Based Molydenum-99 Production Targets Using Radiation Transport and Thermal Hydraulics Calculations, Dominic Giuliano, Richard Lowden *(ORNL)*

Plenary, Special Sessions & Events

WEDNESDAY, AUGUST 2 CONTINUED

19. Computational Analysis of Neutron Signatures for Photofission Assay of SNM Using a Varian K15 Linac, M. Hodges, A. Barzilov, Y. Chen *(UNLV)*

20. Experimental Research Results of the QUINTA Spallation Target Neutron Flux Determination by Temperature Change Measuring Compared with Results Reached by MCNPX and ANSYS Simulation, J. Svoboda *(JINR/Brno Univ of Technology)*, J. Adam *(JINR/Nuclear Physics Inst ASCR)*, A. Baldin *(JINR)*, K. Katovsky *(Brno Univ of Technology)*, A. Solnyshkin, S. Tyutyunnikov *(JINR)*, R. Vespalec *(JINR/Czech Technical Univ)*

21. Monte Carlo Simulations of Processes that Affect Efficiency of Polarized Electron Sources for Accelerators, O. Chubenko, A. Afanasev *(The George Washington Univ)*

22. Determination of the Concentration of Tin in Tin-Containing Samples by Photon Activation Analysis, A. Cesur, M. Karakoc, H. Dapo *(Akdeniz Univ)*, C. Segebade *(BAM and IAC, retired)*, I. Boztosun *(Akdeniz Univ)*

23. Development of a New Accelerator Facility for Biological and Materials Research at Kasetsart University, W. Sudprasert, R. Meesat, T. Chaisawataree, S. Surit, P. Kamhangritirong *(Kasetsart Univ)*, H. J. Whitlow *(Kasetsart Univ/Univ of Louisiana at Lafayette)*

24. Ion Beam Analysis for Diffusion Studies in Geoscience, V. Foteinou, D. Rogalla, H.-W. Becker, R. Dohmen S. Chakraborty *(Ruhr-Univ)*

25. User Facility for Ion Irradiation and Implantation in Single, Dual and Triple Ion Beam Mode with In-Situ TEM Capability, O. Toader, F. Naab, T. Kubley, E. Uberseder *(Univ of Michigan)*

26. Two-Neutron Correlations in the Photofission of Actinides, J. Burggraf, D. S. Dale, T. A. Forest *(Idaho State Univ)*, G. A. Warren, S. C. Stave, S. Behling *(PNNL)*

27. Optimization of ^{99}mTc Isotope Production System Using Coupled Monte Carlo and Fluid Dynamics Methods, Y. V. Rudychev *(V. N. Karazin Kharkiv National Univ/Kharkov Inst of Physics and Technology)*, V. G. Rudychev *(V. N. Karazin Kharkiv National Univ)*, D. V. Fedorchenko *(Kharkov Inst of Physics and Technology)*

28. Design Study of Beam Transport Lines for BioLEIR Facility at CERN, S. Ghithan, G. Roy, S. Schuh *(CERN)*

THURSDAY, AUGUST 3

Plenary IV

Chair: Aliz Simon *(IAEA)*

Location: Palais **Time:** 9:00–11:30 am

9:00 am: RARAF: Microbeams, Broad Beams and Beyond, A. D. Harken, G. Garty, M. Haj Tahar, G. Randers-Pehrson, D. J. Brenner *(Columbia Univ)*

9:45 am: Hadron Beam Therapy, C. Keppel *(Thomas Jefferson National Accelerator Facility)*, invited

10:45 am: High Power Electron Linacs for Production of Rare Isotopes, O. Kester, S. Kocielniak, R. Laxdal *(TRIUMF)*, invited

Coffee

Location: Grande Place **Time:** 10:30 am–10:45 am

FRIDAY, AUGUST 4

Closing Plenary

Chair: Philip Cole *(Lamar Univ)*

Location: Grande Place **Time:** 9:00–11:00 am

Closing remarks and awards will be distributed.

MONDAY, JULY 31
TECHNICAL SESSIONS-1:00 PM

Accelerator Design and Technology—I
Session Organizers: Peter Ostroumov *(MSU/ANL)*, Yousry Gohar *(ANL)*
Cohairs: Peter Ostroumov *(MSU/ANL)*, Oliver Kestler *(TRIUMF)*
Location: Palais **Time:** 1:00-3:05 pm

1:00 pm: Design Concepts for the Next Generation High Power Linear Accelerators, C. Plostinar, M. Eshraqi, Y. Levinsen, R. Miyamoto *(ESS)*, invited

1:25 pm: Design of High Power Heavy Ion Linac for Production of Rare Isotopes, Q. Zhao, M. Ikegami, F. Marti, P. N. Ostroumov, E. Pozdeyev, J. Wei, Y. Yamazaki *(Michigan State Univ)*, invited

1:50 pm: Technology of High Power RF Couplers for Superconducting Resonators, Yongming Li, Tiancai Jiang, Ruoxu Wang, Shenghu Zhang, Yuan He, Hongwei Zhao *(CAS)*, invited

2:15 pm: SPIRAL-2 for Neutron Production, X. Ledoux *(GANIL)*, NFS Collaboration, invited

2:40 pm: Design of High Intensity, High Power Linacs, P. A. P. Nghiem, N. Chauvin *(CEA)*, M. Communian *(INFN/LNL)*, L. Ducrot, J. Dumas *(CEA)*, C. Oliver *(CIEMAT)*, N. Pichoff *(CEA)*, W. Simeoni , Jr. *(Univ Federal do Rio Grande do Sul)*, D. Uriot *(CEA)*, M. Valette *(CERN)*, invited

Accelerator Facilities—I
Session Organizers: Andrew Hutton *(JLab)*, Kevin Jones *(ORNL)*
Cochairs: Robert Garnett *(LANL)*, Kevin Jones *(ORNL)*
Location: St. Louis **Time:** 1:00-3:05 pm

1:00 pm: SNS Proton Power Upgrade Project, J. Galambos *(ORNL)*, invited

1:25 pm: Isotope Production at LERF, A, Hutton *(Jefferson Lab)*, invited

1:50 pm: Clearance from Regulatory Control of the Superconducting Radiofrequency Acceleration System of the Large Electron-Positron *(LEP)* Collider, C. Duchemin, M. Magistris, F. Pozzi, M. Silari *(CERN)*

2:15 pm: Integration of Multiple Facilities at the European Nuclear Science and Application Research, Marek Lewitowicz *(GANIL)*, invited

Materials—I
Session Organizers: Alexander Ryazanov *(Kurchatov Inst)*, Benjamin Rouben *(12 & 1 Consulting)*
Cochairs: Alexander Ryazanov *(Kurchatov Inst)*, Benjamin Rouben *(12 & 1 Consulting)*
Location: Beauport **Time:** 1:00-2:40 pm

1:00 pm: A Radiation Tolerate Structure in a HCP Zr Alloy, Qingshan Dong, Zhongwen Yao, Mark R. Daymond *(Queen's Univ)*

1:25 pm: Effect of Nickel and Helium Implantation on the Indentation Hardness of Inconel X750, Maisaa N. Tawfeeq, Robert J. Klassen *(Western Univ)*

1:50 pm: Design, Material Selection and Operational Feedback for the New Design of the High Energy Beam Dump in the CERN SPS, P. Rios-Rodriguez, A. Perillo-Marconne, J. A. Briz, K. Cornelis, M. Calvani, R. Exposito, S. Gilardoni, B. Goddard, J. L. Grenard, D. Grenier, M. Griecco, J. Humbert, V. Kain, F. Leaux, S. De Man, C. Pasquino, J. R. Poujol, D. Sgobba, D. Steyaert, F. M. Velotti, V. Vlachoudis *(CERN)*

2:15 pm: Ion-Irradiation Induced Inter Diffusion Layer Growth in UMo/Al Fuels, H. Breitkreutz, J. Hingerl, J. Shi, W. Petry *(Technische Universität München)*

Technical Sessions: Monday July 31

MONDAY, JULY 31
TECHNICAL SESSIONS-3:20 PM

Accelerator Design and Technology—II
Session Organizers: Peter Ostroumov *(MSU/ANL)*, Yousry Gohar *(ANL)*
Cochairs: Oliver Kestler *(TRIUMF)*, Peter Ostoumov *(MSU/ANL)*
Location: Palais **Time:** 3:20-5:25 pm

3:20 pm: Accelerator Science and Technology in Support of the National Security Mission, Robert W. Garnett *(LANL)*, invited

3:45 pm: Linac Improvements to Boost the Isotope Production at Brookhaven National Laboratory, D. Raparia *(BNL)*, invited

4:10 pm: The ATLAS Multi-User Upgrade and Potential Applications, B. Mustapha, J. Nolen (ANL), P. N. Ostroumov *(ANL/MSU)*, G. Savard *(ANL)*, invited

4:35 pm: Electron ERL for Isotope Production, V. S. Morozov, H. Areti, S. Benson, Y. S. Derbenev, D. Douglas, A. Kimber, G. A. Krafft, A. Sy *(Thomas Jefferson National Accelerator Facility)*, R. P. Johnson, T. J. Roberts *(MuPlus, Inc.)*, C. Boulware, T. Grimm, V. Starovoitova *(Niowave, Inc.),* invited

5:00 pm: Storage Ring Shielding for the Advanced Photon Source Upgrade, B. J. Micklich *(ANL)*

Accelerator Facilities—II
Session Organizers: Andrew Hutton *(JLab)*, Kevin Jones *(ORNL)*
Cochairs: John Galambos *(ORNL)*, Kevin Jones *(ORNL)*
Location: St. Louis **Time:** 3:20-5:25 pm

3:20 pm: New Facilities of Heavy Ion Accelerator for Basic Science Research and Therapy at IMP, H. W. Zhao, G. Q. Xiao, J. W. Xia, J. C. Yang, P. Yuan, Y. He, X. H. Zhou *(CAS)*

3:45 pm: Status and Prospects of ESS in Lund, C. Plostinar, M. Lindroos *(ESS)*, invited

4:10 pm: Status of Carbon Ion Therapy at the National Institute of Radiological Sciences, T. Kamada *(NIRS),* invited

4:35 pm: The SIRIUS Facility: A Powerful Tool for Studying Radiation Effects in Materials, J. Lefëvre, O. Cavani, B. Boizot *(CEA)*

5:00 pm: Recent Developments and Proposed Applications with the Accelerators at iThemba LABS, J. L. Conradie, L. S. Anthony, F. Azaiez, S. Baard, F. Balzun, G. Badenhorst, R. A. Bark, A. H. Barnard, P. Beukes, J. I. Broodryk, J. Crafford, G. Darries, J. G. de Villiers, C. Doyle, H. Du Plessis, W. Duckitt, D. T. Fourie, P. G. Gardiner, M.E. Hogan, I. H. Kohler, J. Lawrie, C. Lussi, N.R. Mantengu, S. Marsh, V. Mbele, R. H. McAlister, J. P. Mira, H. W. Mostert, C. B. Mtshali, A. S. Miller, S. M. Mullins, C. Naidoo, F. Nemulodi, M. M. Nkosi, O. Pekar, C. A. Pineda-Vargas, W. J. Przybylowicz, M. Sakildien, G. F. Steyn, N. P. Stodart, R. W. Thomae, M. J. van Niekerk, P. A. van Schalkwyk, T. P. Sechogela, S. Winkler, S. Woodborne *(iThemba LABS)*

Materials—II
Session Organizers: Alexander Ryazanov *(Kurchatov Inst)*, Benjamin Rouben *(12 & 1 Consulting)*
Cochairs: Alexander Ryazanov *(Kurchatov Inst)*, Chary Rangacharyulu *(Univ of Saskatchewan)*
Location: Beauport **Time:** 3:20-5:50 pm

3:20 pm: Effect of Ion Irradiation (He/Ni) on Mechanical Properties of X-750 Ni-Based Superalloy CANDU Spacer Material, P. Changizian, Z. Yao, M. R. Daymond *(Queen's Univ)*

3:45 pm: Effect of Proton Irradiation on the Mechanical Property Change of Zircaloy-2 Alloy, F. Long, Z. W. Yao, M. R. Daymond *(Queen's Univ)*

4:10 pm: Experimental Investigation of Irradiation Effects in Beryllium: Preliminary Results and Plans, V. Kuksenko *(Univ of Oxford)*, K. Ammigan *(Fermilab)*, C. Densham *(Rutherford Appleton Lab)*, P. Hurh *(Fermilab),* S. Roberts *(Univ of Oxford)*

4:35 pm: Universal Empirical and Theoretical Fits to K- and L-Shell X-Ray Production Cross Sections, Gregory Lapicki *(East Carolina Univ)*, invited

5:00 pm: New Set-Ups at Liege University Irradiation Facility for Radiation Tests and Qualification Campaigns of Materials Dedicated to Space Applications, G. Chêne, A. Holsbeek, A. Marchal, L. Rossi, O. Dubreuil, K. Fleury-Frenette, A. Carapelle, B. Marquet, D. Strivay *(Liege Univ)*

5:25 pm: Irradiation Effects in Tungsten-Based Alloys with Titanium for Fusion Reactors, N. Catarino, M. Dias *(Universidate de Lisboa)*, J. Lopes *(Inst Superior de Engenharia de Lisboa)*, E. Alves *(Universidade de Lisboa)*

TUESDAY, AUGUST 1
TECHNICAL SESSIONS-1:00 PM

Accelerator Design and Technology—III
Session Organizers: Peter Ostroumov *(MSU/ANL)*, Yousry Gohar *(ANL)*
Cochairs: Valeri Lebedev *(Fermilab)*, Yousry Gohar *(ANL)*
Location: Palais **Time:** 1:00-3:05 pm

1:00 pm: ActiWiz 3—Getting Ready for an Activ(ated) Future, C. Theis, H. Vincke *(CERN)*

1:25 pm: Shielding Calculation of 200 keV Electron Beam for Irradiation of Laboratory Animal, Seungwoo Park, Su Chul Han *(Korea Inst of Radiological and Medical Sciences)*

1:50 pm: FLUKA Studies of Dose Rates in the ATLAS Standard Opening Scenario, J. C. Armenteros, A. Cimmino, S. Roesler, H. Vincke *(CERN)*

2:15 pm: The Use of CAD Based Radiation Transport in Support of SNS, A. Davis, L. J. Jacobson, P. P. H. Wilson *(Univ of Wisconsin, Madison)*, F. Gallmeier *(ORNL)*

Accelerators for Monitoring the Environment—I
Session Organizers and Cochairs: Ian Swainson *(IAEA)*, Christian Segebade *(BAM and IAC, retired)*
Location: St. Louis **Time:** 1:00-2:40 pm

1:00 pm: Investigation of Beef and Fizzy Drink Consumption on Tooth Samples by Photoactivation Analysis in Southern Turkey, Y. Kavun *(Celal Bayar Univ)*, C. Segabade *(BAM and IAC, retired)*, I. Boztosun, H. Dapo *(Akdeniz Univ)*, I. Maraş *(Celal Bayar Univ)*

1:25 pm: The Collaborative IAEA TC Project on the Investigation of Fine and Coarse Atmospheric Particulate Matter in ARASIA Region, M. Roumié *(Lebanese Atomic Energy Commission)*

1:50 pm: Comparison of Sulfate Content Derived from Sulfur in $PM_{2.5}$ Particles by PIXE and a MARGA Monitor, and Inter-Comparison of PIXE Results in Two Laboratories, F. Aldape, J. Flores, J. Flores-Aldape (ININ), A. Reatama-Hernández, O. Rivera-Hernandez *(Secretaría del Medio Ambiente)*

2:15 pm: Overview of "Environmental Issues" Studied by Ion Beam Analysis Techniques in the Field of Cultural Heritage Artefacts Conservation, G. Chêne, L. Vanwersch, D. Bossiroy, H. Calvo del Castillo, C. Defeyt, D. Strivay *(Liege Univ)*

Radioisotopes—I
Session Organizers: Valeriia Starovoitova *(Niowave, Inc.)*, Suzanne Lapi *(Univ of Alabama at Birmingham)*
Cochairs: Suzanne Lapi *(Univ of Alabama at Birmingham)*, Cornelia Hoehr *(TRIUMF)*
Location: Beauport **Time:** 1:00-3:05 pm

1:00 pm: Isotope Production with High Energy High Current Proton Beam at Brookhaven National Laboratory, D. Medvedev, A. DeGraffenreid, L. F. Mausner, C. S. Cutler *(BNL)*, invited

1:25 pm: Energy-Recovery Linacs for Commercial Radioisotope Production, R. P. Johnson T. J. Roberts *(Muons, Inc.)*

1:50 pm: High Power Targets for Accelerator Production of Ac-225 at Los Alamos National Laboratory, F. M. Nortier, R. Bhandia, E. R. Birnbaum, J. C. Cooley, K. D. John, C. Martinez, E. R. Olivas *(LANL)*

2:15 pm: Photonuclear Production of Radioisotopes with a Medical Linac, M. R. Shepherd (Indiana Univ), R. Cardman (Allegheny College), C. S. Loveless, S. L. Queern, S. Ferran, L. L. Radford, S. E. Lapi *(Univ of Alabama at Birmingham)*, invited

2:40 pm: Production and Isolation of ^{237}U and Fission Fragments Resulting from the ^{238}U (γ, n) ^{238}U(γ, f) Reactions, Edna Cardenas, M. T. Kinlaw, K. P. Carney, M. R. Finck, J. J. Horkley, E. M. May, J. E. S. Davies, M. S. Snow, J. K. Pfeiffer *(INL)*, A. W. Hunt *(Johns Hopkins Univ)*, J. Stoner *(Idaho State Univ)*

Technical Sessions: Tuesday August 1

TUESDAY, AUGUST 1
TECHNICAL SESSIONS-1:00 PM

Materials—III
Session Organizers: Alexander Ryazanov *(Kurchatov Inst)*, Benjamin Rouben *(12 & 1 Consulting)*
Cochairs: Alexander Ryazanov *(Kurchatov Inst)*, Mark Daymond *(Queen's Univ)*
Location: Beaumont/Belair **Time:** 1:00-2:40 pm

1:00 pm: Applications of High-Energy Proton Radiography at Los Alamos National Laboratory, Z. Tang *(LANL)*

1:25 pm: Fast Areal Density Measurement Enabled by High-Energy Proton Time-of-Flight, L. P. Neukirch *(LANL)*, LANL pRad Collaboration

1:50 pm: Nanoindentation Study of Zr Ion Irradiated Zr-2.5Nb Alloy, Qiang Wang, Mark Daymond *(Queen's Univ)*

2:15 pm: Experimental and Theoretical Investigations of Influence of Fast Particle Irradiation on the Cyclotron of NRC "Kurchatov Institute" on the Microstructure Changes and Radiation Swelling of Al_2O_3, A. I. Ryazanov *(Kurchatov Inst/MEPHI)*, A. L. Vasiliev, V. S. T. Latushkin, E. D. Olshansky, E. V. Semenov, V. N. Unezhev *(Kurchatov Inst)*

TECHNICAL SESSIONS-3:20 PM

Accelerator Design and Technology—IV
Session Organizers: Peter Ostroumov *(MSU/ANL)*, Yousry Gohar *(ANL)*
Cochairs: Robert Garnett *(LANL)*, Yousry Gohar *(ANL)*
Location: Palais **Time:** 3:20-5:25 pm

3:20 pm: Neutron Displacement Cross-Sections for Materials from Be to U Calculated Using the Arc-dpa Concept, A. Yu. Konobeyev, U. Fischer, S. P. Simakov *(KIT)*

3:45 pm: Neutron Distribution and Neutronics Behavior for an ADS as Transmutator and Regenerator System, Carlos E. Velasquez *(UFMG/Inst Nacional de Ciência e Technologia de Reatores Nucleares Inovadores/Rede Nacional de Fusão)*, Renato V. A. Marques *(UFMG)*, Graiciany de P. Barros *(CNEN)*, Fabiano Cardoso, Claubia Pereira, Maria Auxiliadora F. Veloso, Antonella L. Costa *(UFMG/Inst Nacional de Ciência e Technologia de Reatores Nucleares Inovadores/Rede Nacional de Fusão)*

4:10 pm: Scaled Experiments for Very High Intensity Beam Dynamics, S. L. Sheehy *(Univ of Oxford/ISIS Neutron and Muon Source)*, D. J. Kelliher *(STFC/ISIS Neutron and Muon Source)*, L. Martin *(Univ of Oxford)*, S. Machida *(STFC/ISIS Neutron and Muon Source)*

4:35 pm: Cyclotrons as Reliable and Cost Effective Drivers for Accelerator Driven Systems (ADS), Andreas Adelmann *(PSI)*

5:00 pm: Reliability Analysis of the ESS Target Safety System, A. Sadeghzadeh, L. Coney, M. Olsson *(ESS)*

Accelerators for Monitoring the Environment—II
Session Organizers and Cochairs: Ian Swainson *(IAEA)*, Christian Segebade *(BAM and IAC, retired)*
Location: St. Louis **Time:** 3:20-5:00 pm

3:20 pm: The Photon and Neutron Interrogation Methods for Contrabands Realized with a Single Electron Linear Accelerator, Yigang Yang *(Tsinghua Univ)*

3:45 pm: MCNP6 Simulations of Active Neutron Interrogation of Fissile Samples Using a Deuterium-Deuterium Neutron Generator, F. Ali, G. Bentoumi *(Canadian Nuclear Laboratories)*

4:10 pm: NAAS: An Online Tool for Nuclear Activation Analysis, Z. J. Sun, Y. Kim *(South Carolina State Univ)*

TUESDAY, AUGUST 1
TECHNICAL SESSIONS-3:20 PM

Radioisotopes—II
Session Organizers: Valeriia Starovoitova *(Niowave, Inc.)*, Suzanne Lapi *(Univ of Alabama at Birmingham)*
Cochairs: Suzanne Lapi *(Univ of Alabama at Birmingham)*, Sergey Chemerisov *(ANL)*
Location: Beauport **Time:** 3:20-5:25 pm

3:20 pm: Cyclotron Production of Positron Emitting Radiometals at the University of Alabama at Birmingham, T. A. Aweda, B. Brooks, J. L. Burkemper, I. Chaple, H. Doane, R. El Sayad, S. Ferran, C. S. Loveless, A. F. Massicano, S. L. Queern, L. L. Radford, J. Rider, I. Super, B. D. Wright, S. E. Lapi *(Univ of Alabama at Birmingham)*, invited

3:45 pm: Characterization and Utilization of Neutron Radiation from a PETrace Cyclotron, J. Brockman, B. Jefferies, C. Algiere, P. Norgard, J. Gahl *(Univ of Missouri)*

4:10 pm: New Facility for Production of Medical Isotopes, M. Kiselev, B. Lambert, Vermal Richards, W. Skarupa, M. Wardach, J. Zehner *(Zevacor Molecular)*, S. Ermolaev, B. Zhuikov *(INR)*

4:35 pm: Saskatchewan Centre for Cyclotron Sciences: A New Multi-User $CAN25 Million Research and Production Facility, G. Boudreault, S. Colbert, M. Hutcheson, D. Schick-Martin, J. MacKenzie *(Saskatchewan Centre for Cyclotron Sciences)*, M. Dalzell, K. Schneider *(Sylvia Fedoruk Canadian Centre for Nuclear Innovation)*

5:00 pm: New Medical Isotopes for Combined PET/SPECT Imaging, C. Rangacharyulu (Univ of Saskatchewan)

Industrial Applications—I
Session Organizers: Bob Hamm *(R&M Tech)*, Ross Radel *(Phoenix Nuclear Labs)*
Cochairs: Matt Michalak *(PNL)*, Tom Ward *(Techsource)*
Location: Beaumont/Belair **Time:** 3:20-5:00 pm

3:20 pm: Compact CW Recirculating Electron Accelerator up to 10 MeV, C. Johnstone *(Fermilab)*

3:45 pm: Commercial Applications of High-Yield Accelerator-Based Neutron Generators, Ross Radel *(Phoenix Nuclear Labs, LLC)*

4:10 pm: Neutron Radiography Using a High-Flux Compact Thermal Neutron Generator, Katie Rittenhousen, Matt Michalak, Michael J. Taylor, Chris Seyfert, Evan Sengbusch, Ross Radel *(Phoenix Nuclear Labs, LLC)*

4:35 pm: A Compact Storage Ring for the Production of EUV Radiation, T. Garvey, L. Rivkin, A. Streun, A. Wrulich, Y. Ekinci *(PSI)*

Technical Sessions: Wednesday August 2

WEDNESDAY, AUGUST 2
TECHNICAL SESSIONS-1:00 PM

Accelerator-Driven Systems—I
Session Organizers: Blair Bromley *(Canadian Nuclear Society)*, François Méot *(BNL)*
Cochairs: Yousy Gohar *(ANL)*, Ciprian Plostinar (*ESS)*
Location: Palais **Time:** 1:00-3:05 pm

1:00 pm: Development of 100 kW 650 MHz Continuous Wave Radiofrequency Amplifier for Proton Linear Accelerator, Y. Jiang *(Yale Univ)*, V. E. Teryaev *(Omega-P R&D Inc.)*, S. V. Shchelkunov, J. L. Hirshfield *(Yale Univ/Omega-P R&D Inc.)*

1:25 pm: Design and Commissioning Results of 100 MeV/100kW Electron Linear Accelerator of the NSC KIPT Subcritical Facility "Neutron Source", Ivan Karnaukhov, Andrey Zelinsky *(NSC KIPT)*, Yousry Gohar *(ANL)*, YunLong Chi *(IHEP)*

1:50 pm: Design and Commissioning of NSC KIPT NS Driver Electron Linac, Y, Chi *(IHEP)*, A.Y. Zelinsky *(Kharikov Inst of Physics and Technology)*, Y. Gohar *(ANL)*, invited

2:15 pm: Overview of Activities on Accelerator Driven Subcritical System in India, Amar Sinha, Tushar Roy, Shefali Bajpai, Mayank Shukla, Nirmal Ray, Yogesh Kashyap, Tarun Patel *(BARC)*, invited

High-Power Accelerators and High-Power Spallation Targets—I
Session Organizers and Cochairs: John Galambos (ORNL), Eric Pitcher (LANL)
Location: St. Louis **Time:** 1:00-3:05 pm

1:00 pm: Status and Plans for the ESS Facility, R. Linander *(ESS)*, invited

1:25 pm: Progress and Remaining Challenges to Long Lifetime, High Power Mercury Spallation Targets, D. Winder, B. Riemer *(ORNL)*

1:50 pm: Recent Status of the MLF/J-PARC, Masatoshi Futakawa, Katsuhiro Haga, Shinichiro Meigo, Hiroshi Takada, Kazuo Hasegawa *(JAEA)*

2:15 pm: Status and Prospects of the China Spallation Neutron Source, S. Wang *(CAS)*, invited

2:40 pm: Status and Plans for ISIS, D. Adams, C. M. Warsop, I. S. K. Gardener, G. H. Rees *(STFC)*, invited

Radioisotopes—III
Session Organizers: Valeriia Starovoitova *(Niowave, Inc.)*, Suzanne Lapi *(Univ of Alabama at Birmingham)*
Cochairs: Valeriia Starovoitova *(Niowave, Inc.)*, Dmitri Medvedev *(BNL)*
Location: Beauport **Time:** 1:00-3:05 pm

1:00 pm: Medical Isotope Production at TRIUMF—From Imaging to Treatment, C. Hoehr *(TRIUMF)*, invited

1:25 pm: Accelerator Based Production of Mo-99 from Mo-100, S. D. Chemerisov, P. Tkac, D. A. Rotsch, M. K. Alford, R. Gromov, J. Bailey, M. Virgo, C. D. Jonah, V. Makarashvili, K. A. Wesolowski, G. F. Vandegrift *(ANL)*

1:50 pm: Mo-99 Production via DT Fusion Driven Subcritical Assembly, Matt Michalak (*Phoenix Nuclear Labs, LLC)*, Greg Piefer *(SHINE Medical Technologies)*, Ross Radel *(Phoenix Nuclear Labs, LLC)*

2:15 pm: Technetium 99m—From Reactors to Accelerators—Regulatory and Safety Aspects, A. Alwani *(CNSC)*

2:40 pm: Simulation of the Liquid Targets for Molybdenum-99 Production, Y. V. Rudychev, D. V. Fedorchenko, M. A. Khazhmuradov *(Kharkov Inst of Physics and Technology)*

WEDNESDAY, AUGUST 2
TECHNICAL SESSIONS-3:20 PM

Accelerator-Driven Systems—II
Session Organizers: Blair Bromley *(Canadian Nuclear Society)*, François Méot *(BNL)*
Cochairs: Suzie Sheehy *(STFC/RAL)*, Fabio Panza *(INFN)*
Location: Palais **Time:** 3:20-5:50 pm

3:20 pm: Burnup Analyses of an Accelerator Driven Subcritical System Utilizing Minor Actinides, Yan Cao, Yousry Gohar, Adam R. Kraus *(ANL)*

3:45 pm: A New Transmutation Approach of Using High Energy Photonic Source Accelerators, Zeev Shayer *(CSM)*

4:10 pm: Effect of Models on the Evaluation of the Neutron Lifetime for Subcritical Systems, S. Dulla, P. Ravetto *(Politecnico di Torino)*, P. Saracco, W. Borreani *(INFN)*, M. Carta, V. Fabrizio *(ENEA C. R. Casaccia)*, V. Peluso *(ENEA C.R. Ezio Clementel)*

4:35 pm: Actinide Incineration with Thorium Fuel: A Study Using the MYRRHA Design, R. J. Barlow *(Univ of Huddersfield)*, A.Rummana *(Univ of Huddersfield/Ibra College of Technology)*, invited

5:00 pm: Applications for Accelerator Driven Subcritical Reactors, T. J. Roberts, R. P. Johnson *(Muons, Inc.)*

5:25 pm: High Power Accelerators: A Concern for International Safeguards?, S. Richet *(IAEA)*

Industrial Applications—II
Session Organizers: Bob Hamm *(R&M Tech)*, Ross Radel *(Phoenix Nuclear Labs)*
Cochairs: Katie Rittenhouse *(PNL)*, Yusuf Kavun *(Celal Bayer Univ)*
Location: St. Louis **Time:** 3:20-4:35 pm

3:20 pm: Using a Medical Electron Linear Accelerator for Instrumental Photon Activation Analysis—A Feasibility Study, Chr. Segebade, H. Dapo, I. Boztosun, C. Eke *(Akdeniz Univ)*, Y. Kavun *(Celal Bayar Univ)*, O. Agar *(Karamanoğlu Mehmetbey Univ)*, invited

3:45 pm: Elemental Analysis in Minerals Industry Applications Using Electron Linear Accelerators, C. Tissot, Peter Coghill *(Commonwealth Scientific and Industrial Research Organisation)*, Justin Delaney *(Commonwealth Scientific and Industrial Research Organisation/Univ of Wollongong)*, Rhys Preston *(Chrysos Corporation Ltd)*, James Tickner *(Commonwealh Scientific and Industrial Research Organisation/Chrysos Corporation Ltd)*

4:10 pm: Accelerator Neutron Induced Positron Annihilation Spectroscopy for Thick Sample Non-Destructive Examination, Thomas Ward *(Techsource)*, David Koltick *(Purdue Univ)*

Radioisotopes—IV
Session Organizers: Valeriia Starovoitova *(Niowave, Inc.)*, Suzanne Lapi *(Univ of Alabama at Birmingham)*
Cochairs: Valeriia Starovoitova *(Niowave, Inc.)*, Matt Shepherd *(Univ of Indiana)*
Location: Beauport **Time:** 3:20-5:25 pm

3:20 pm: Isotope Production at Los Alamos National Laboratory, E. R. Birnbaum *(LANL)*, invited

3:45 pm: Dual Proton—Helium Accelerator for Radioisotope Production, D. Bruton, R. Barlow, T. Edgecock (*Univ of Huddersfield)*, C. Johnstone *(Fermilab)*

4:10 pm: Short-Lived Radioisotopes Production in a Molten Loop Target, D. Houngbo *(SCK/CEN/UGent)*, A. P. Bernardes *(CERN)*, J. C. David *(CEA)*, M. Delonca *(CERN)*, M. Dierckx, L. Ghys *(SCK/CEN)*, K. Kravalis *(IPUL)*, S. Lahiri *(SINP)*, R. Losito *(CERN*), A. Marchix *(CEA)*, T. M. Mendonca *(CERN)*, L. Popescu (SCK/CEN), D. Schumann *(PSI)*, P. Schuurmans *(SCK/CEN)*, T. Stora, J. Vollaire *(CERN)*, J. Vierendeels *(UGent)*

4:35 pm: Impact of Pu-238 Production on Neutron Scattering Experiments in the High Flux Isotope Reactor, Katherine E. Royston, Joel M. Risner, David Chandler *(ORNL)*

5:00 pm: High Current C-11 Gas Target Design and Optimization Using Multi-Physics Coupling, J. L. Peeples *(BTI Targetry LLC)*, M. Magerl *(IBA Molecular North America)*, E. M. O'Brien, J. M. Doster, I. A. Bolotnov *(NCSU)*, B. W. Wieland, M. H. Stokely *(BTI Targetry LLC)*

Technical Sessions: Thursday August 3

THURSDAY, AUGUST 3
TECHNICAL SESSIONS-1:00 PM

Accelerators in Life Sciences—I
Session Organizer: Carol Johnston *(FNAL)*, Carmel Mothersill *(McMaster Univ)*
Cochairs: Carmele Mothersill *(McMaster Univ)*, Dejan Trbojevic *(BNL)*
Location: Palais **Time:** 1:00-3:05 pm

1:00 pm: Use of Halbach Type Magnets in Nuclear Science Applications, N. Tsoupas, F. Méot, V. Ptitsyn, D. Trbojevic *(BNL)*, invited

1:25 pm: MedAustron—A New Austrian Synchrotron Facility for Cancer Therapy and Research, L. Jäegerhofer *(EBG MedAustron GmbH)*

1:50 pm: Real-Time Imaging for Multi-Ion Beam Therapy, C. Johnstone *(Fermilab)*, R. Schulte *(Loma Linda Univ)*, F. DeJongh *(Protonvda Co.)*

2:15 pm: Progress Towards Rebirth and Innovation of Ion Therapy in the U.S., C. Johnstone *(Fermilab)*, R. Schulte *(Loma Linda Univ)*

2:40 pm: HEATHER—HElium Ion Accelerator for radioTHERapy, J. Taylor, T. R. Edgecock *(Univ of Huddersfield)*, C. Johnstone *(Fermilab)*

Nuclear Data—I
Session Organizers: Arjan Plompen *(EC-JRC)*, Adriaan Buijs *(McMaster Univ)*
Cochairs: Yaron Danon *(RPI)*, Adriaan Buijs *(McMaster Univ)*
Location: St. Louis **Time:** 1:00-3:05 pm

1:00 pm: Fission Nuclear Data Measurements at the Los Alamos Neutron Science Center, F. Tovesson *(LANL)*

1:25 pm: Neutron Capture and Total Cross Section Measurements of Cadmium at the RPI LINAC, G. Leinweber, D. P. Barry, R. C. Block, J. A. Burke, M. J. Rapp *(KAPL)*, Y. Danon (RPI)

1:50 pm: Evaluation of Neutron Induced Reactions on ^{238}U and ^{239,241}Pu for Accelerator-Driven Systems, Hairui Guo *(Inst of Applied Physics and Computational Mathematics)*, Yinlu Han *(China Inst of Atomic Energy)*, Tao Ye, Weili Sun *(Inst of Applied Physics and Computational Mathematics)*

2:15 pm: Cross Section Measurement in J-PARC for Neutronics of the ADS, S, Meigo, H. Matsuda, H. Iwamoto *(JAEA)*

2:40 pm: Recent Improvements to CINDER2008 and Activation Analysis Tools, B. J. Micklich (ANL), F. X. Gallmeier, E. B. Iverson, W. Lu *(ORNL)*, R. Bergmann, M. Wohlmuther *(PSI)*

High-Power Accelerators and High-Power Spallation Targets—II
Session Organizers: John Galambos *(ORNL)*, Eric Pitcher *(LANL)*
Cochairs: Yongjoong Lee *(ESS)*, John Galambos *(ORNL)*
Location: Beauport **Time:** 1:00-3:05 pm

1:00 pm: A Beam Dump Facility (BDF) at CERN—The Concept and a First Radiological Assessment, M. Calviani, M. Casolino, R. Jacobsson, M. Lamont, S. Roesler *(CERN)*, C. Ahdida *(PSI)*, H. Vincke *(CERN)*

1:25 pm: Development of Dense Granular-Flow Target (DGT), Sheng Zhang, Ping Lin, Lei Yang *(CAS)*, invited

1:50 pm: 3D Thermal-Structural Analyses of SINQ Rod Bundle Target, R. Sobbia, Y. Dai, S. Jollet, M. Wohlmuther *(PSI)*

2:15 pm: A Water Cooled, Active and Adjustable Aperture Collimator, K. Woloshun, J. O'Hara, E. Olivas, A. Maestas, E. Swenson, H. Salazar *(LANL)*

2:40 pm: White Beam Neutron Sources at the Los Alamos Neutron Science Center, E. J. Pitcher, C. T. Kelsey IV, F. Tovesson *(LANL)*

THURSDAY, AUGUST 3
TECHNICAL SESSIONS-3:20 PM

Accelerators in Life Sciences—II
Session Organizers and Cochairs: Carol Johnston *(FNAL)*, Carmel Mothersill *(McMaster University)*
Location: Palais **Time:** 3:20-5:00 pm

3:20 pm: A Bio-Safety Level-2 Facility for Irradiation of Tissue with MeV Ions, H. J. Whitlow, J. Dias, A. deVera, N. Deoli, K. M. Smith, D. Rogers, R. Broussard (*Univ of Louisiana at Lafayette)*

3:45 pm: Accelerator-Based Boron Neutron Capture Therapy in the USA, J. S. Welsh *(Loyola Univ/Edward Hines, Jr.VA Hospital)*

4:10 pm: Possibility of the Accelerator Based Neutron Source for SNCT, Guo He *(China Inst of Atomic Energy)*, Meng Peng *(China Inst of Atomic Energy/Lanzhou Univ)*, Youngmao Zhou, Xichao Ruan, Qiwei Zhang, Bin Shi *(China Inst of Atomic Energy)*, Changlin Lan *(Lanzhou Univ)*, Hongqing Tang, Zuying Zhou *(China Inst of Atomic Energy)*

4:35 pm: Shielding Analysis of a Carbon-Ion Therapy Accelerator: A Comparison Between Analytical and Monte Carlo Calculations, B. L. Lai, R. J. Sheu, *(Natl Tsing Hua Univ)*

Nuclear Data—II
Session Organizers: Arjan Plompen *(EC-JRC)*, Adriaan Buijs *(McMaster Univ)*
Cochairs: Adriaan Buijs *(McMaster Univ)*, Yaron Danon *(RPI)*
Location: St. Louis **Time:** 3:20-5:25 pm

3:20 pm: Thick Target Neutron Production on Beryllium by Deuterons, T. Ye, J. Wang, W. Sun *(Inst of Applied Physics and Computational Mathematics),* Z. Wei, Z. Yao *(Lanzhou Univ)*

3:45 pm: Production Cross Section of ^{124}I by Proton-Induced Reactions, T. Ye, J. Wang, H. Guo, W. Sun *(Inst of Applied Physics and Computational Mathematics)*, Y. Han *(China Inst of Atomic Energy)*

4:10 pm: Knowledge Improvement of n,xn Reactions Excitation Functions, P. Chudoba *(CAS/Charles Univ)*

4:35 pm: Global Evaluation for n+^{10}B with R-Matrix Method, Weili Sun, Jia Wang, Tao Ye *(Inst of Applied Physics and Computational Mathematics)*, Zhenpeng Chen, Yueying Sun *(Tsinghua Univ)*

5:00 pm: How Nuclear Data Collected for Medical Radionuclides Production at ARRONAX Could Constrain TALYS Code, C. Duchemin, A. Guertin *(SUBATECH)*, F. Haddad (*SUBATECH/GIP ARRONAX)*, N. Michel *(GIP ARRONAX)*, V. Métivier (*SUBATECH)*

High-Power Accelerators and High-Power Spallation Targets—III
Session Organizers: John Galambos *(ORNL)*, Eric Pitcher *(LANL)*
Cochairs: Eric Pitcher *(LANL)*, Bernie Riemer *(ORNL)*
Location: Beauport **Time:** 3:20-5:50 pm

3:20 pm: Status and Update of the RaDIATE Collaboration R&D Program, K. Ammigan, P. G. Hurh *(Fermilab)*

3:45 pm: Neutronics Study Aided by High Fidelity Modeling for the SNS Proton Power Upgrade Project, W. Lu, F. X. Gallmeier, I. Remec *(ORNL)*, A. Davis *(Univ of Wisconsin, Madison)*

4:10 pm: SNS Proton Power Upgrade Project—First Target Station Scope, B. W. Riemer *(ORNL)*

4:35 pm: Material Selection and Lifetime Criteria for the ESS Target Station, Y. Lee *(ESS)*

5:00 pm: Assessment of Environmental Consequences of the Normal Operations of the ESS Facility, D. Ene *(ESS)*, R. Avila *(Facilia AB)*, D. Bugay *(EcoMonitor)*, T. Hjerpe, K. Stenberg *(Facilia AB)*

5:25 pm: Detection Efficiency of the ESS Target Imaging System: Monte Carlo Simulations, N. Borghi, E. Klinkby, B. Lauritzen *(DTU)*, L. Zanini *(ESS)*

Exhibitors List

Best Medical International	(Booth 2)
Buckley Systems Ltd.	(Booth 6)
Los Alamos National Laboratory, Experimental Physical Sciences Directorate	(Booth 3)
Muons, Inc.	(Booth 11)
Phoenix Nuclear Labs	(Booth 4)
Starfire Industries	(Booth 7)
TDK-LAMBDA AMERICAS-HP DIVISION	(Booth 1)
W-IE-NE-R, Plein & Baus Corp.	(Booth 5)

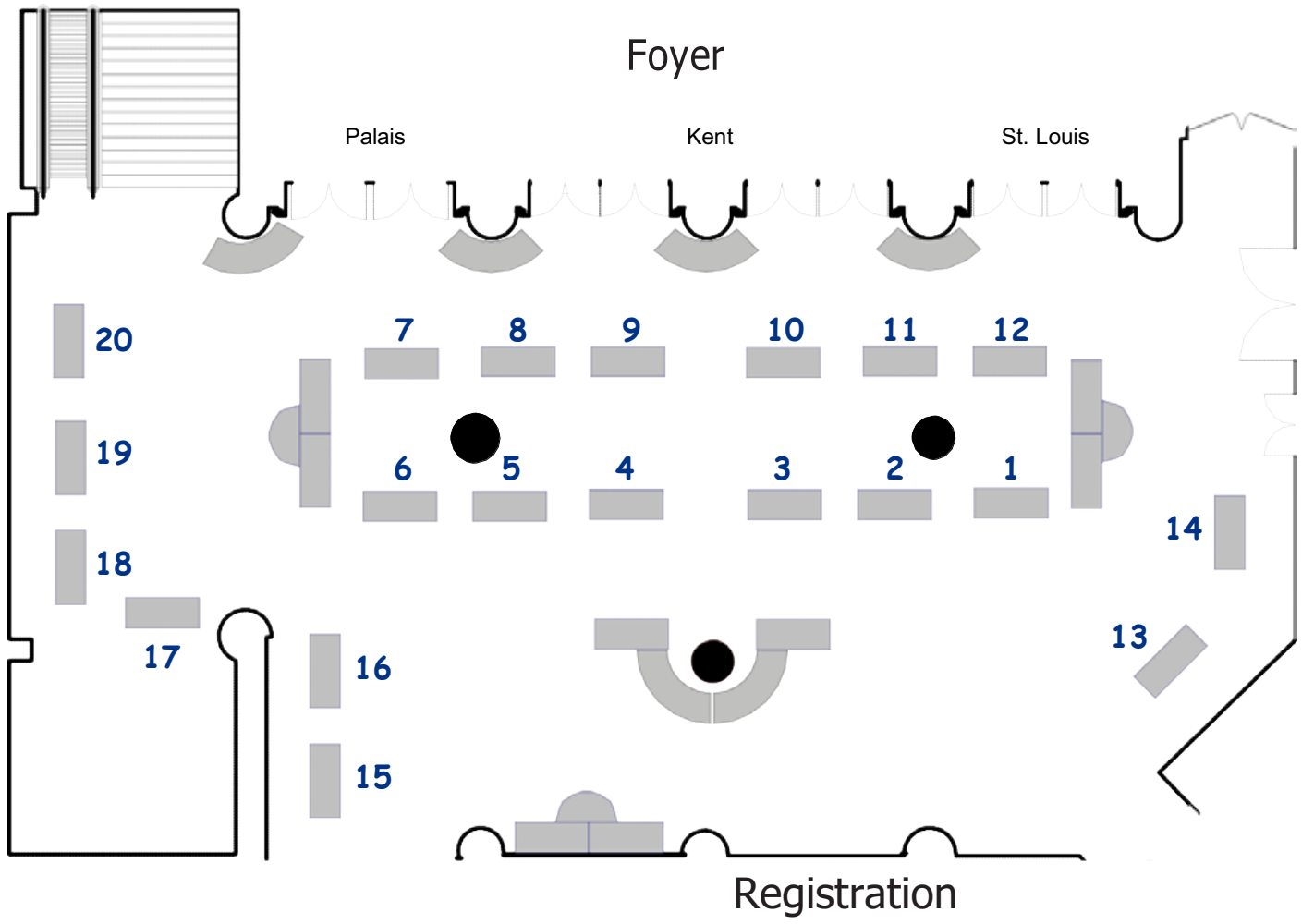
Hours:

Sunday, July 30th–
6:00 to 8:00 pm

Monday, July 31st–
7:00 am to 5:00 pm

Tuesday, August 1st–
7:00 am to 3:40 pm

Floor Plan



Exhibitor & Expo Info

Best Medical International
Springfield, VA (Booth 2)

Best Medical manufactures Best® Iodine-125, Best® Palladium-103, Iridium-192 and Gold-198 seeds, along with HDR accessories, fiducial markers, Best® Brachytherapy Kits and other products. Seeds are available either loose or loaded in cartridges, needles or strands, and are available sterile or non-sterile. Best Medical can make catheters, needles, templates and applicators to meet your special needs.

Buckley Systems Ltd.
Auckland, New Zealand (Booth 6)

Buckley Systems is a world leading Designer and Manufacturer of very high precision Electro-Magnets, Vacuum systems, Accelerator equipment and Beam Physics Hardware.

Hand size to 40 Ton, magnets are designed on our full suite of 3D modeling software and manufactured for Industrial, Medical and Research facilities.

Los Alamos National Laboratory, Experimental Physical Sciences Directorate
Los Alamos, NM (Booth 3)

Los Alamos Neutron Science Center (LANSCE) performs scientific research in nuclear physics and material science for national security needs. In addition, LANSCE has a vibrant research program in fundamental science, utilizing intense sources of neutrons and protons for scientific discovery and the production of medical and research isotopes.

Muons, Inc.
Newport News, VA (Booth 11)

Since 2002 Muons, Inc. has led efforts at national laboratories, universities, and other companies to invent and develop particle accelerator systems and components for discovery science, national security, energy, medicine, and the environment. We are developing accelerator-driven molten-salt subcritical reactors to burn SNF and W-Pu for process heat and radioisotopes.

Phoenix Nuclear Labs
Madison, WI (Booth 4)

Phoenix Nuclear Labs (PNL) was founded in Madison in 2005 with goal of producing clean fusion energy. PNL's technology has advanced in applications within the health, defense, aerospace, and energy sectors. The lab is currently evolving from a custom R&D shop to an industry-leading manufacturer of particle acceleration and neutron generation systems.

PNL is committed to provide nuclear technology for the betterment of humanity. To learn more, check out www.phoenixnuclearlabs.com or email PNL at info@phoenixnuclearlabs.com.

Starfire Industries
Champaign, IL (Booth 7)

Starfire Industries works with an array of global partners to develop customized solutions for neutron and plasma applications. To learn more about Starfire's solutions, including patented nGen™ accelerator technology for non-radioactive D-D neutron generation, visit our website at starfireindustries.com. Starfire's headquarters for R&D and manufacturing are in Champaign, IL USA.

TDK-LAMBDA AMERICAS-HP DIVISION
Neptune, NJ (Booth 1)

TDK-Lambda Americas is a leading world class manufacturer of programmable High Voltage and High Current AC to DC, and Capacitor Charging power supplies from 6V to 50,KV and currents from 1.6A to 3,000A at power levels from 750W to 90kW in a single package.

W-IE-NE-R, Plein & Baus Corp.
Springfield, OH (Booth 5)

High performance electronic instrumentation and data acquisition for nuclear physics research:

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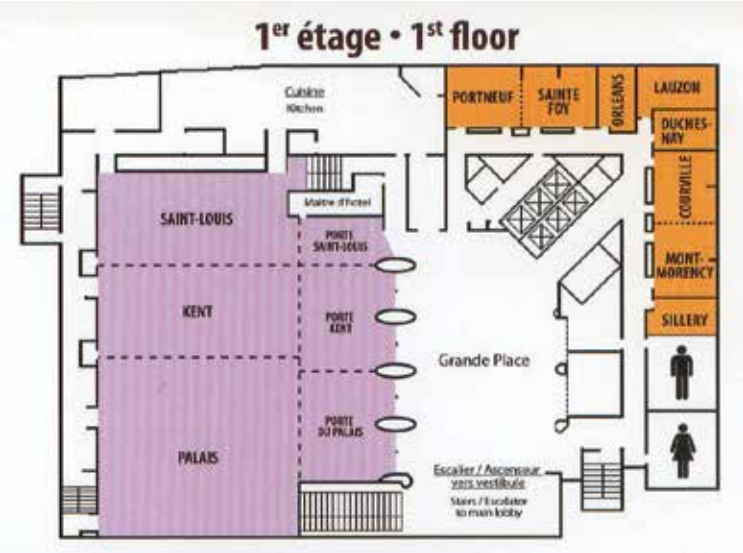
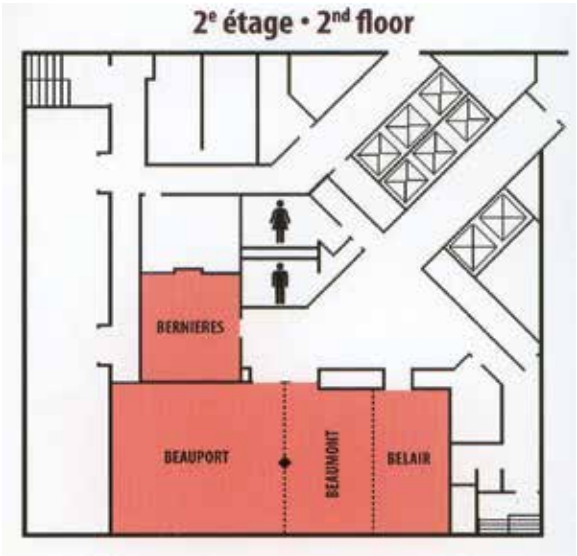
- MESYTEC: Analog read-out electronics, VME Digitizer (ADC/QDC/TDC) and digital pulse processor modules [www.mesytec.com]
- GBS: Multi-channel analyzers [www.gbs-elektronik.de]

Hotel Map


Rez-de-chaussée • Main Floor
DUFFERIN
VILLERAY
DE TOURNY
Allegro Bar & Restaurant
Centre d'affaires
Business Center
Lobby
Escalier / Ascenseur vers 1er étage
Stairs / Escalator to first floor
Main entrance


1er étage • 1st floor
Cuisine
Kitchen
PORTNEUF
SAINTE FOY
ORLEANS
LAUZON
DUCHESNAY
COURVILLE
MONT-MORENCY
SILLERY
SAINT-LOUIS
Maître d'hôtel
PORTE SAINT-LOUIS
KENT
PORTE KENT
Grande Place
PORTE DU PALAIS
PALAIS
Escalier / Ascenseur vers vestibule
Stairs / Escalator to main lobby


2e étage • 2nd floor
BERNIERES
BEAUPORT
BEAUMONT
BELAIR

ANS Meetings

2017

UWC 2017

Utility Working Conference and Vendor Technology Expo
AUGUST 6-9, 2017
AMELIA ISLAND, FL

NCSD

SEPTEMBER 10-15, 2017
CARLSBAD, NM

PSA

SEPTEMBER 24-28, 2017
PITTSBURGH, PA

2017 ANS Winter Meeting & Expo

OCTOBER 29-NOVEMBER 2, 2017
WASHINGTON, D.C.

Embedded Topical

YOUNG PROFESSIONALS CONGRESS
OCTOBER 28, 2017
WASHINGTON, D.C.

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2018

NETS

FEBRUARY 26-MARCH 1, 2018
LAS VEGAS, NV

Student Conference

APRIL 6-8, 2018
GAINESVILLE, FL

ICAPP

APRIL 8-11, 2018
CHARLOTTE, NC

MARC XI

11th International Conference on Methods and Applications of Radioanalytical Methods
APRIL 8-13, 2018
KAILUA-KONA, HI

ANS Annual Meeting

JUNE 17-21, 2018
PHILADELPHIA, PA

UWC 2018

Utility Working Conference and Vendor Technology Expo
AUGUST 5-8, 2018
AMELIA ISLAND, FL

RPSD

AUGUST 26-31, 2018
SANTA FE, NM

Plutonium Futures

SEPTEMBER 9-14, 2018
SAN DIEGO, CA

Applicability Of Radiation-Response Models To Low Dose Protection Standards

SEPTEMBER 23-26, 2018
PASCO, WA

2018 PBNC

SEPTEMBER 30-OCTOBER 5, 2018
SAN FRANCISCO, CA

2018 ANS Winter Meeting & Expo

NOVEMBER 11-15, 2018
ORLANDO, FL

Embedded Topical

(TOFE)
NOVEMBER 11-15, 2018
ORLANDO, FL

Embedded Topical

ATH' 18
NOVEMBER 11-15, 2018
ORLANDO, FL

American Nuclear Society
Accelerator Applications Division

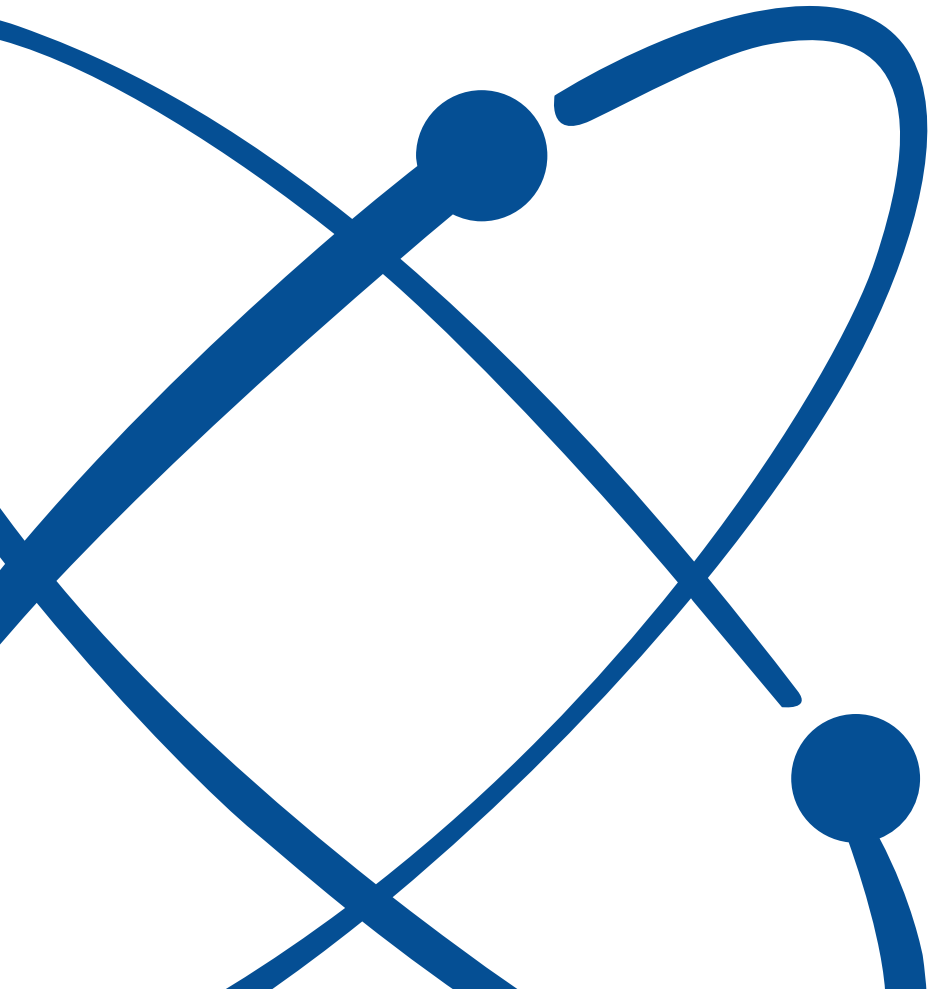
AccApp '17

13th International Topical Meeting on Nuclear Applications of Accelerators

The Expanding Universe of Accelerator Applications
L'expansion de l'univers des applications d'accélérateurs

IAEA 60 Years
Atoms for Peace and Development

July 31-August 4, 2017
Hilton Québec
Québec City, Québec, Canada



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