



# IAS 2023, Saskatoon, Canada 10-20 July 2023



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# School Overview

- School on superconducting technology in accelerators – inc. RF, magnets, ancillary engineering systems.
- Aimed at postgraduate MSc, PhD, and staff scientists and engineers.
- Motivated by Canadian activities; HL-LHC upgrade, ARIEL at TRIUMF, SRF at CLS, international collaborations.
- Located on the campus of UofS with tours of CLS SRF and SC magnet facility.
- July 2023 to fit in between USPAS usually June and CAS usually Aug/Sep.



# JAS History

Past Programs			
Year	Location	Program Details	School Proceedings
2019	Dubna, Russia	Ion Colliders	Poster Time Table
2017	Hayama-machi, Japan	RF Technologies	
2014	Newport Beach, California, USA	Beam Loss and Accelerator Protection	"Beam Loss and Accelerator Protection", CERN Yellow Report (2016) ISBN 978-92-9083-426-7 (paperback), ISBN 978-92-9083-427-4 (PDF) Lectures
2013	Shizuoka, Japan	Introduction to Particle Accelerators (regional session)	Photos
2011	Erice, Sicily, Italy	Synchrotron Radiation and Free Electron Lasers	Lectures Student Presentations
2002	Long Beach, California, USA	Frontiers of Accelerator Technology in Linacs	"Linear Accelerators" edited by H. Wiedemann, D. Brandt, E. Perevedtsev and S.I. Kurokawa (World Scientific, 2004) ISBN 981-238-463-4
2000	St. Petersburg, Russia	Frontiers of Accelerator Technology: High Quality Beams	"High Quality Beams" edited by S.I. Kurokawa, S.Y. Lee, J. Miles and E. Perevedtsev (AIP, 2001) ISBN 0-7354-0034-2
1998**	Montreux, Switzerland	Beam Measurement	"Beam Measurements" edited by S.I. Kurokawa, S.Y. Lee, E. Perevedtsev, S. Turner (World Scientific, 1999) ISBN 981-02-3881-9
1996	Hayama-machi, Japan	Frontiers of Accelerator Technology: RF Engineering for Particle Accelerators	"Frontiers of Accelerator Technology" edited by S.I. Kurokawa, M. Month and S. Turner (World Scientific, 1999) ISBN 981-0203838-X
1994*	Maui, Hawaii, USA	Frontiers of Accelerator Technology	"Frontiers of Accelerator Technology" edited by S.I. Kurokawa, M. Month, and S. Turner (World Scientific, 1996) ISBN 981-02-2537-7
1992	Benalmadena, Spain	Frontiers of Particle Beams: Factories with e+e- Rings	Lecture Notes in Physics No. 425 Springer-Verlag
1990	Hilton Head, South Carolina, USA	Frontiers of Particle Beams: Intensity Limitations	Lecture Notes in Physics No. 400 Springer-Verlag
1988	Anacapri, Italy	Frontiers of Particle Beams: Observation, Diagnosis and Correction	Lecture Notes in Physics No. 343 Springer-Verlag
1986	South Padre Island, Texas, USA	Frontiers of Particle Beams	Lecture Notes in Physics No. 296 Springer-Verlag
1985	Santa Margherita di Pula, Sardinia	Nonlinear Dynamics	Lecture Notes in Physics No. 247 Springer-Verlag

\* becomes the US-CERN-Japan International Accelerator School  
\*\*becomes the US-CERN-Japan-Russia International Accelerator School

- Formerly called JAS – Joint Accelerator School.
- No past program specifically on SC tech.
- Canada included as part of a push for a new International Accelerator School (IAS) transition promoted by CERN.
- Aimed at postgraduate MSc, PhD, and staff scientists and engineers.
- First school in 1985, 15 schools held, on average one every two and a half years.
- Information on past schools:
  - <https://cas.web.cern.ch/about/joint-international-accelerator-schools>
  - <https://uspas.fnal.gov/programs/JAS/index.shtml>



# IAS 2023 Goals

- Create a respectful and fun learning environment
  - Help students learn new ideas and perspectives
  - Network and inspire each other
  - Make friends
  - Study hard
- 
- Your goals?



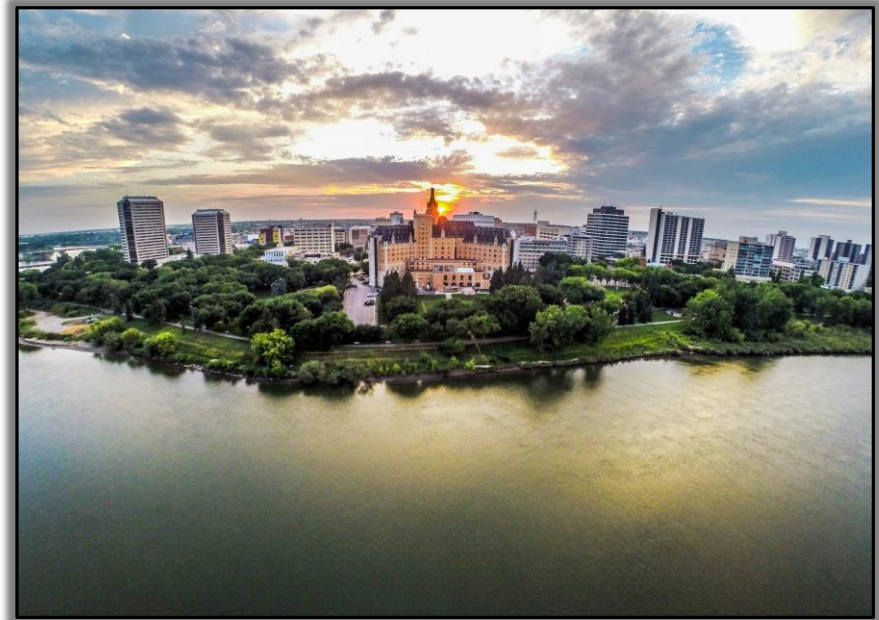


# Program Overview

	10/07/2023	11/07/2023	12/07/2023	13/07/2023	14/07/2023	15/07/2023	16/07/2023	17/07/2023	18/07/2023	19/07/2023	20/07/2023		
Time	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu		
9:00 - 9:50	Arrival Day & Registration	Opening Welcome Mark Boland (Uofs-CLS)	Fundamentals of superconductivity 2 Rogério De Sousa (Uvic)	Linear Optics 3 magnet requirements Todd Satogata (Jlab)	Longitudinal Dynamics 2 RF structure requirements Frank Tecker (CERN)	Free Time	Cryostat Technology for accelerators Arkadiy Klebaner (SLAC)	Cryoplant Engineering and Operations Arkadiy Klebaner (SLAC)	Innovation Techniques in Accelerators 1 Andrei Seryi (Jlab)	Innovation Techniques in Accelerators 3 Andrei Seryi (Jlab)	Departure Day		
10:00 - 10:50		The Case for High Energy Colliders Mike Lamont	Linear Optics 1 basic concepts Todd Satogata (Jlab)	Longitudinal Dynamics 1 basic concepts Frank Tecker (CERN)	CLS cryoplant overview Grant Henneberg (CLS)		Instrumentation for cryogenics 1 Nusair Hasan (MSU)	Instrumentation for cryogenics 2 Nusair Hasan (MSU)	Innovation Techniques in Accelerators 2 Andrei Seryi (Jlab)	Challenges for EIC Andrei Seryi (Jlab)			
11:00		Coffee					Coffee						
11:30 - 12:20		Accelerator Physics Primer and need for SC technologies 1 Hermann Schmickler (CERN)	Case study: ECRIS SC Magnet and Superconducting magnet system of HIAF-HFRS Wei Wu (IIMP)	Fundamentals of SRF 1 Tobias Junginger (Uvic)	Fundamentals of SRF 2 Tobias Junginger (Uvic)	Lunch	Basic Crab cavities Yoshiyuki Morita (KEK)	KEKB experience with crab cavities Yoshiyuki Morita (KEK)	Case study: The Superconducting ARIEL e-linac at TRIUMF Oliver Kester (TRIUMF)	Student Oral Presentations			
12:30		Lunch					Lunch						
14:00 - 14:50		Overview of CLS Mark Boland (Uofs-CLS)	Linear Optics 2 methods for machine design Todd Satogata (Jlab)	Beam Envelope Simulations and High Level Applications for Operations 1 Rick Bartman (TRIUMF)	Beam Envelope Simulations and High Level Applications for Operations 2 Rick Bartman (TRIUMF)	Excursion to Wanuskewin	SC Magnets 1 GianLuca Sabbi (LBL)	SC Magnets 2 GianLuca Sabbi (LBL)	CLS cryoplant tour Grant Henneberg (CLS)	Student Oral Presentations			
15:00 - 15:50		Accelerator Physics Primer and need for SC technologies 2 Hermann Schmickler (CERN)	Beam Instrumentation for colliders Hermann Schmickler (CERN)	SRF cavities 1 Bob Laxdal (TRIUMF)	SRF cavities 2 Bob Laxdal (TRIUMF)		Pick up at 1:00 at hotel	Machine-Detector Interface design at SuperKEKB Hiroyuki Nakayama (KEK)	Cryogenic systems and operations at KEK 1 Hirotaka Nakai (KEK)	CLS cryoplant tour Grant Henneberg (CLS)		Student Oral Presentations	
16:00		Tea					Leave Wanuskewin at 4:45	Tea					
16:30 - 17:20		Fundamentals of superconductivity 1 Rogério De Sousa (Uvic)	Study Time	Study Time	Study Time	Beam background measurements at SuperKEKB Hiroyuki Nakayama (KEK)		Cryogenic systems and operations at KEK 2 Hirotaka Nakai (KEK)	CLS SRF cavity tour Grant Henneberg (CLS)	Discussions and Closing Session Mark Boland (Uofs-CLS)			
17:30 - 18:20			Free Time	Free Time	Free Time	Free Time	Free Time	SC cavity design and production Yoshiyuki Morita (KEK)	Free Time	CLS Accelerator and Beamline tour Mark Boland (Uofs-CLS)		Free Time	
18:30	Dinner	Welcome Party	Dinner					Banquet	Dinner				



# Location: Saskatoon, Saskatchewan



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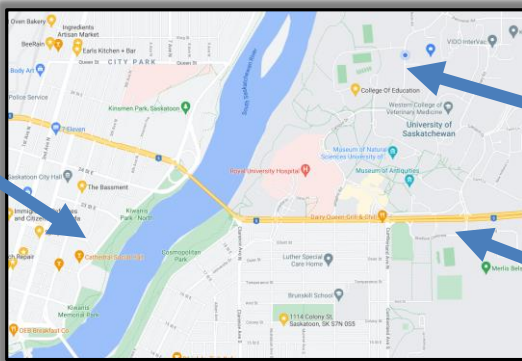


# Accommodation: Saskatoon Holiday Inn

- Self contained for the school
- On the edge of campus
- Close to CLS
- Easy access to Downtown
- Shared affordable accommodation for students



Down  
Town



CLS

Holiday Inn



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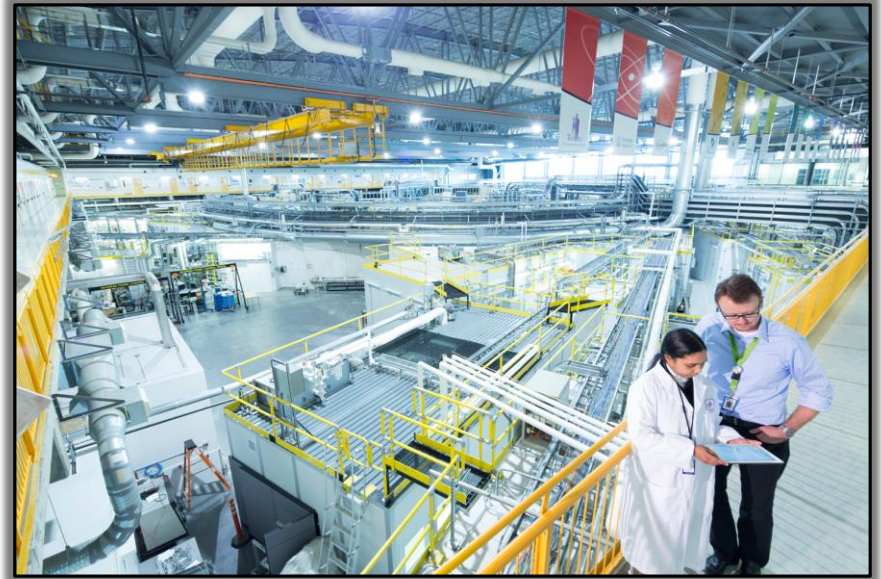
# Facilities On-Site

- Top floor with nice view for classes
- Complete service available or access to campus food services and downtown restaurants





# Saskatoon Attractions



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# Getting to know each other

- If you feel comfortable...
  - Your name
  - country of birth
  - country you work/study
  - Career ambitions
  - Anything else...

