

CAARI 2024 SPEAKER SCHEDULE SUMMARY - MONDAY, JULY 22, 2024

Plenary Sessions		Rio Grande
	PS-01	
9:00 AM	Blas Pedro Uberuaga	Novel approaches for in situ interrogation of irradiated materials

9:45 - 10:00 AM	Break
-----------------	--------------

General Sessions	
------------------	--

RE-07		Title: Irradiation Effects in the Extremes, II	Elm Fork I
		Chair: Osman El Atwani	
10:00 AM	Ibrahim Karaman	Functionally Graded Joints from Tungsten to Ferritic/Martensitic Steels Fabricated using Laser - Directed Energy Deposition as Plasma Facing Components	
10:30 AM	Hyosim Kim	On the application of an engineered ferritic/martensitic alloy for fusion environments	
11:00 AM	Mia Jin	Revealing radiation-induced defects and defect-phonon scattering in ThO ₂	

AF-02		Title: Machine Learning for Particle Accelerators I	Elm Fork II
		Chair: Alexander Scheinker	
10:00 AM	Alexander Scheinker	Adaptive Physics Constrained ML for Autonomous Particle Accelerators	
10:20 AM	Malachi Schram	Leveraging Distance-Aware Uncertainty Estimation for Machine Learning and Advanced Controls in Particle Accelerators	
10:40 AM	Mahindra Rautela	Latent autoregressive recurrent approach for generation and forecasting spatiotemporal beam dynamics	
11:00 AM	Kishansingh Rajput	Errant Beam Prognostics with Machine Learning at SNS Accelerator	
11:15 AM	Alan Williams	Safe Extremum Seeking in Accelerators and Machine Learning	

OM-01		Title: Facility Updates I	Trinity Central
		Chair: Mark Roberts	
10:00 AM	Peter Linardakis	Status report for the Australian National University's Heavy Ion Accelerator Facility (HIAF)	
10:20 AM	David Button	ANSTO Centre for Accelerator Science Lab Report for 2024	
10:40 AM	Naresh Deoli	Status report for the Columbia Radiological Research Accelerator Facility	
11:00 AM	Luke Antwis	Facilities at the UK National Ion Beam Centre	

CAARI 2024 SPEAKER SCHEDULE SUMMARY - MONDAY, JULY 22, 2024

NST-04		Title: Surface Science with Charged Particle Beams	West Fork II
		Chair: Michael Titze & Alex Belianinov	
10:00 AM	Jon Poplawsky	Ultra-low kV Ion Implantation Depths Analyzed by Atom Probe Tomography	
10:30 AM	Ludwig Bartels	Pseudo-Epitaxial and Aligned Growth of Transition Metal Dichalcogenide Heterostack	
11:00 AM	Varghese Anto Chirayath	Coincidence Doppler broadening spectroscopy of single layer graphene on copper using a variable energy positron beam	
11:15 AM	Hany Mahdy	Measuring the chemical composition of the topmost atomic layer of clean and adsorbate covered metal surfaces using a low energy positron beam	

NBAT-02		Title: In Situ and Operando Neutron Scattering Techniques for Materials Research	Post Oak
		Chair: Hanyu Wang	
10:00 AM	Yangyang Wang	Time-resolved SANS study of deformation-induced demixing in polymer blends	
10:30 AM	Galina Yakubova	Tagged neutron technique for in-situ soil composition determination	
11:00 AM	Shao Wei Tsai	Unraveling the Molecular Mechanisms of Ion-selective Redox-mediated Electrosorption by In Situ Neutron Reflectometry	

11:30 - 1:00 PM

Lunch

Grand Ballroom

RE-06		Title: Irradiation Effects in the Extremes, I	Elm Fork I
		Chair: Osman El Atwani	
1:00 PM	Mitra Taheri	Processing and Characterization of Refractory High Entropy Alloys as Candidates for Fusion Reactor Materials	
1:25 PM	Osman El Atwani	Novel Refractory High Entropy Alloys for Applications in Extreme Environments	
1:50 PM	Boris Maiorov	Rapid Selection and Elastic Property Determination of Novel High-Entropy Alloys using Resonant Ultrasound Spectroscopy	
2:15 PM	Mina Tavakolzadeh	Hydrogen Retention in Copper-Tungsten Nanocomposites	

OM-02		Title: Facility Updates II	Trinity Central
		Chair: David Button	
1:00 PM	Daniel Robertson	CASPAR Underground Accelerator Facility Update and Planning	
1:20 PM	Gregory Leblanc	Status Report for Edwards Accelerator Laboratory at Ohio University	
1:40 PM	Edward Stech	Lab Status Report for Notre Dame's Nuclear Science Laboratory	
2:00 PM	Prashanta Niraula	Status Report for Michigan Ion Beam Laboratory	

CAARI 2024 SPEAKER SCHEDULE SUMMARY - MONDAY, JULY 22, 2024

NP-09		Title: Neutron and Fundamental Symmetries, I	West Fork I
		Chair: Matthew Devlin	
1:00 PM	Sean Finch	Measurement of 14 MeV tD neutron production from the reaction-in-flight of dD fusion	
1:30 M	Richard Hughes	Differential neutron scattering measurements on U-238 using monoenergetic beams	
2:00 PM	Andrew Cooper	Neutron reaction experiments in inverse kinematics with the Neutron Target Demonstrator and Low-Energy Heavy Ion Source at LANSCE	

SD-03		Title: Neutron and Gamma Technologies for Security and Defense	West Fork II
		Chair: Matthew Coventry	
1:00 PM	Brian Bucher	Development towards a field-portable tagged neutron interrogation system for imaging and chemical analysis	
1:30 PM	Mauricio Unzueta	Associated Particle Imaging for security and defense applications	
2:00 PM	Mairead Montague	Uranium Detection using Photon Active Interrogation based on Delayed Neutron Analysis	
2:15 PM	Matthew Coventry	Testing and evaluation of an associated particle imaging neutron generator	

IBTM-04		Title: Ion and Micro Beam Analysis	Post Oak
		Chair: Karen Kavanagh	
1:00 PM	Greta Andrini	IBIC technique for the in-situ assessment of the ion beam spot size and single-ion counting.	
1:30 PM	Todd Byers	Status of the Scanning Light Ion Microprobe at the University of North Texas	
1:45 PM	Jorden Matty	The fabrication and design of a liquid target holder for Ion Beam Analysis	
2:00 PM	Darshpreet Saini	Trace Element Analysis of Air Dust Samples using Particle-Induced X-ray Emission Spectroscopy	
2:15 PM	Karen Kavanagh	Imaging Seeds for Archaeology	

**2:30 - 3:00
PM**

Break

ISM-02		Title: Synthesis and Modification of Metal-Halide inspired Materials	Elm Fork I
		Chair: Bibhudutta Rout	
3:00 PM	Ian Sellers	Metal Halide Perovskite Solar Cells for Emerging Space Applications	
3:25 PM	William Weber	Effects of Electronic Energy Loss on Ion-Beam Modification of Oxide Perovskites	
3:50 PM	Manas Dalai	Observation of Superconducting Transition at ~ 25 K in Ag Implanted Au Thin Film	
4:10 PM	Mritunjaya Parashar	Study of the Elemental Diffusion and Radiation Tolerance of Metal Halide Perovskite Solar Cells	

CAARI 2024 SPEAKER SCHEDULE SUMMARY - MONDAY, JULY 22, 2024

NST-01		Title: Nanoscale Pattern Formation Produced by Ion Bombardment of Solid Surfaces I	Elm Fork II
		Chair: Mark Bradley	
3:00 PM	Karl Ludwig	Investigation of Ar/Si Ion Beam Nanopatterning Near the Critical Angle	
3:30 PM	Matteo Barelli	Large area periodically modulated plasmonic and 2D Transition Metal Dichalcogenide layers featuring flat-optics light harvesting	
4:30 PM	Scott Norris	Some Advancements in the Continuum Modeling of Ion-Induced Nanopattern Formation	

OM-03 <i>(Session to run long)</i>		Title: Operations and Maintenance	Trinity Central
		Chair: Peter Linardakis & Chris Westerfeldt	
3:00 PM	Dannie Steski	Safety Review of the BNL Tandem Facility	
3:20 PM	David Button	Update on ANSTO's New BPM Interface and Measurement System	
3:40 PM	Thomas Tunningley	Rejuvenation of the 14UD at ANU	
4:00 PM	Mikko Laitinen	Accident in the JYFL Accelerator Laboratory – Lessons Learned	
4:20 PM	Luca Maran (20 min)	The 2 low energy Van de Graaf Accelerators AN2000 and CN maintenances and operation of Legnaro National Laboratories (Italy)	

IA-02		Title: Industrial and Medical X-ray, Gamma-ray and UV Systems and Applications	West Fork I
		Chair: Sergey Kutsaev	
3:00 PM	Marcos Ruelas	Development of Pre-Clinical Electron FLASH LINACS with X-Ray Capability	
3:30 PM	Anthony Tylenda	Design efforts to upgrade beam power of a 10 MeV S-band e-beam system from 15 kW to 25 kW	
4:00 PM	Shinsuke Nakayama	Development of deuteron nuclear reaction database and its applications: from compact to large scale neutron sources	

IBTM-01		Title: In-situ and In-Operando Materials Analysis Using Ion Beams	Post Oak
		Chair: Robert Kolasinski	
3:00 PM	Christopher Smyth	Revealing Fundamental Radiation Response in Atomically-Thin Transition Metal Sulfides (MoS ₂ , WS ₂) through In-Situ Ion Irradiation Experiments	
3:30 PM	Lyudmila Goncharova	Quantifying radiolysis effects for in-situ RBS and electrochemical impedance spectrometry (EIS)	
3:45 PM	Robert Kolasinski	Ion and neutral time-of-flight spectroscopy as an in-situ diagnostic for probing plasma-exposed surfaces	
4:00 PM	Mohin Sharma	Investigating the in-situ radiation damage in optical sensors using ion beam-induced charge microscopy	
4:15 PM	Patrick Kirscht	An attempt to predict oligomer sputtering using binary collision approximation simulations	

5:00 - 7:00 PM	Poster Session	Grand Ballroom
-----------------------	-----------------------	-----------------------

7:30 - 9:30 PM	Student Appreciation Event (by invite only)	
-----------------------	----------------------------------------------------	--

CAARI 2024 SPEAKER SCHEDULE SUMMARY - TUESDAY, JULY 23, 2024

Plenary Sessions

Rio Grande

9:00 AM	VR	Vendor Roadshow
----------------	-----------	-----------------

9:45 - 10:00 AM

Break

General Sessions

ISM-04		Title: Mechanical Properties of Ion-Irradiated Complex Alloys	Elm Fork I
		Chair: Lukasz Kurpaska	
10:00 AM	Khalid Hattar	Coupling Ion Accelerators to Small-scale Mechanical Testing and Analytical Tools for Rapid Screening of Complex Material Systems	
10:30 AM	Malgorzata Lewandowska	Development of ODS steels for fusion and other harsh environments	
11:00 AM	Sri Tapaswi Nori	Irradiation-Induced Defect Characteristics and Hardening Behaviour of Oxide-dispersion Strengthened Concentrated Solid Solution Alloys	
11:15 AM	Andrea Stinchelli	In-situ Transmission Electron Microscopy study of irradiation-induced crystallization in advanced amorphous ceramic coatings	

RE-10		Title: Irradiation Effects in the Extremes, III	Elm Fork II
		Chair: Osman El Atwani	
10:00 AM	Michael Short	Beam-On Irradiation Effects for Faster Down-Selection of Fusion Reactor Material Candidates	
10:30 AM	Peter Hosemann	Surface near Helium damage in materials studied with a high throughput implantation method	
11:00 AM	Daniel Velazquez	Avalanche Energy: The development of the Orbitron, a micro-fusion reactor for clean, mobile and distributed energy applications	

OM-04		Title: Ion Sources	Trinity Central
		Chair: Dannie Steski	
10:00 AM	Mark Harrison	Analytic Model for Filament Degradation in Filament-Driven DC Ion Sources	
10:20 AM	Naresh Deoli	Heavy ions for radiobiological work at the Columbia Radiological Research Accelerator Facility	
10:40 AM	Ashton Morelock	Current status of the Triton source at Florida State University	
11:00 AM	Eric Alderson	Development and performance of sub-nanoamp beam diagnostics at National Electrostatics Corp.	

CAARI 2024 SPEAKER SCHEDULE SUMMARY - TUESDAY, JULY 23, 2024

NP-10		Title: Neutron and Fundamental Symmetries, II	West Fork I
		Chair: Matthew Devlin	
10:00 AM	Ingrid Knapova	Neutron capture cross sections measured with DANCE	
10:25 AM	Danielle Schaper	Fundamental Physics using Pulsed Neutron Sources: Using Compound Nuclear (Resonance) States to Search for Exotic Beyond the Standard Model Physics	
10:50 AM	Thomas Baumann	Development of a high-resolution fast-neutron detector	
11:15 AM	Matthew Devlin	Recent High-precision Prompt Fission Neutron Spectra Measurements for Fast Neutron-induced Fission at LANSCE	

NST-05		Title: Quantum Information Sciences	West Fork II
		Chair: Alex Belianinov & Michael Titze	
10:00 AM	Eric Rosenthal	The tin-vacancy qubit in diamond: an emerging platform for quantum technologies	
10:30 AM	Yeghishe Tsaturyan	Synthesis of optically active solid-state spin qubits via ion implantation and irradiation	
11:00 AM	Vignesh Chandrasekaran	Quantum business opportunities	

SD-05		Title: Space-Based Security & Defense Applications	Post Oak
		Chair: Gennady Miloshevsky	
10:00 AM	Sivanandan Harilal	Applications of laser-produced plasmas in the fields of space security and nuclear non-proliferation	
10:35 AM	Farhat Beg	Plasma ablation and shock generation to study the effect of laser impulse	
11:10 AM	Gennady Miloshevsky	MIRDIC computer code for predictive modeling of electrostatic discharge induced by space radiation in dielectric and insulating materials of spacecrafts	

11:30 - 1:00 PM

Lunch

Grand Ballroom

RE-01 <i>(Session to run long)</i>		Title: Irradiation Effects in Semiconductor and Applications	Elm Fork I
		Chair: Feng Ren	
10:00 AM	Michael Titze	Displacement Damage and Total Ionizing Dose Response of Ga ₂ O ₃ MOSFETs	
10:20 AM	Lauren Bezzina	Radiation Testing for Electronic Devices in Space at the ANU Heavy Ion Accelerator Facility	
10:35 AM	Mia Jin	Radiation-induced crystalline defects in Al _x Ga _{1-x} N	
10:55 AM	Sergei Kucheyev	Radiation defect engineering in hexagonal boron nitride	
11:10 AM	Miguel Crespillo	Defect generation mechanisms in silica under intense electronic excitation by ion beams below 100 K: Interplay between radiative emissions	
11:30 AM	Feng Ren	Modification of (Photo)electrocatalytic nanomaterials by ion beam technology	

CAARI 2024 SPEAKER SCHEDULE SUMMARY - TUESDAY, JULY 23, 2024

AF-03		Title: Machine Learning for Particle Accelerators II	Elm Fork II
		Chair: Alexander Scheinker	
1:00 PM	Fuhao Ji	Multi-Objective Bayesian Active Learning for MeV-ultrafast electron diffraction	
1:20 PM	Willem Blokland	Machine Learning to improve the Spallation Neutrons Source Accelerator and Target performance	
1:40 PM	Xilin Zhang	Report on accelerator-physics-related machine learning studies from FRIB theory group	
1:55 PM	Peter Norgard	Particle Beam Focus Optimization using Stochastic Swarm Technique	
2:10 PM	Christopher Leon	Physics-constrained machine learning for electrodynamics based on Fourier transformed Maxwell's equations	

OM-05		Title: Open SNEAP Discussion	Trinity Central
		Chair: Edward Stech	
1:00 PM	Daniel Robertson	SNEAP Communications and Web Based Presence	

SD-04		Title: Detectors for Accelerator-Based Systems	West Fork II
		Chair: Nerine Cherepy	
1:00 PM	John Derek Demaree	Scintillation response of gallium oxide to charged particle and gamma radiation produced by radioisotope and accelerator sources	
1:20 PM	Nerine Cherepy	Detectors for MeV X-ray and Neutron Imaging	
1:40 PM	Nathan Gillespie	Investigating Ce and Tb Concentrations in Translucent Rare-Earth Aluminum Garnet Ceramic Scintillators	
2:00 PM	Kimberly Pestovich	Radiation Hardness of New Inorganic Halide Single Crystal Scintillators	

MC-VAC-01		Title: Vacuum Class I	Post Oak
		Chair: John Screech	
1:00 PM	John Screech	Ultra-High Vacuum Seminar: Part 1 of 2 Session Series	

**2:30 - 3:00
PM**

Break

ISM-05		Title: Ionization Enhanced Synthesis, Modifications and Analysis	Elm Fork I
		Chair: Vaithiyalingam Shutthanandan	
3:00 PM	Zihua Zhu	Nanoscale hydrogen detection using time-of-flight secondary ion mass spectrometry	
3:20 PM	Vaithiyalingam Shutthanandan	Radiant Precision: Exploring Material Radiation with the Helium Ion Microscope	
3:40 PM	William Weber	Effects of Electronic Energy Loss on Amorphization Behavior in Pyrochlore Oxides	
4:00 PM	Yanwen Zhang	Ionization Effects on Nanostructured Materials Subjected to Ion Irradiation	

CAARI 2024 SPEAKER SCHEDULE SUMMARY - TUESDAY, JULY 23, 2024

NST-02		Title: Nanoscale Pattern Formation Produced by Ion Bombardment of Solid Surfaces II	Elm Fork II
		Chair: Mark Bradley	
3:00 PM	Alvaro Lopez Cazalilla	Insights on silicon nanopatterning induced by low-energy surface bombardment	
3:30 PM	Mark Bradley	A Simple Dynamical Model that Leads to Sputter Cone Formation	
4:00 PM	Huck Beng Chew	Ion Bombardment of Carbon Targets and Beyond: Bridging Molecular Dynamics Simulations and Reduced-order Models	

NP-13 <i>(Session to run long)</i>		Title: Precision Measurements, Amo-Nuclear Techniques, I	West Fork I
		Chair: Alfredo Galindo-Uribarri	
3:00 PM	Yan Zhou	Precision spectroscopy of heavy molecular ions using quantum logic scheme	
3:20 PM	Kia Boon Ng	Probing physics beyond the Standard Model with molecular ion $^{227}\text{ThF}^+$	
3:40 PM	Alex Brinson	Precision Measurement Techniques for Isotope Shifts of Unstable Atoms	
4:00 PM	Jaime Cardona	Expanding Experimental Opportunities at TRIUMF with TITAN EBIT	
4:15 PM	Xing Wu	Advancing EDM searches with ultracold radioactive molecules at FRIB	
4:30 PM	Edwin Penafiel (15 min)	Precision Measurements with Cavity QED and Molecules for Fundamental Physics	

IA-03		Title: Compact Accelerator-Based Systems for Geo-Physical Applications	West Fork II
		Chair: Jani Reijonen	
3:00 PM	Weijun Guo	Geochemistry and Saturation Applications Utilizing A New Slim Pulsed Neutron Technology	
3:30 PM	Ahmed Badruzzaman	"Compact" Accelerators in Geological Probing, Petroleum to Climate Mitigation-State of Technology Ahmed Badruzzaman	
4:00 PM	Christopher Meert	Quantification of Mercury Contamination using a Compact Cadmium Zinc Telluride Imaging Spectrometer and Neutron Generator.	

MC-RD-01		Title: Radiation Damage: Fundamentals and Applications	Post Oak
		Chair: Yongqiang Wang	
3:00 PM	Lin Shao	Accelerator-based radiation materials science for nuclear engineering	
3:45 PM	Joshua Young	Using ion beam irradiation as a surrogate for neutron displacement damage in microelectronics: Simple theory and equivalency considerations	

5:00 - 7:00 PM	Topic Editor, Session Chair, and Vendor Appreciation Event (<i>all welcome</i>)		Grand Ballroom
-----------------------	----------------------------------------------------------------------------------------	--	-----------------------

CAARI 2024 SPEAKER SCHEDULE SUMMARY - WEDNESDAY, JULY 24, 2024

Plenary Sessions		Rio Grande
	PS-02	
9:00 AM	Maria Gatu Johnson	Diagnostic development in MIT accelerator lab in support of advances in Inertial Confinement Fusion, including Ignition

9:45 - 10:00 AM	Break
-----------------	-------

General Sessions

RE-03		Title: Irradiation Effects in Ceramics	Elm Fork I
		Chair: Miguel Crespillo	
10:00 AM	Joseph Graham	Using Cryo-Ionoluminescence to Differentiate the Electronic and Nuclear Origins of Emission Bands in Strontium Titanate	
10:25 AM	Marta Malo	He implantation and radiation effects on coatings for fusion applications	
10:50 AM	Elena Tajuelo Rodriguez	Review on the state of knowledge of neutron and gamma radiation effects on concrete	
11:15 AM	Nishant Garg	Elucidating Radiation-Induced Degradation in Siliceous Minerals in Concrete via Multi-modal Imaging	

AF-01		Title: Accelerator Facilities I	Elm Fork II
		Chair: Fuhao Ji	
10:00 AM	Mauricio Portillo	Recent Developments and Scientific Highlights at the FRIB Facility	
10:25 AM	Amy Sy	Pioneering research in accelerator and beam physics: recent highlights and initiatives at Jefferson Lab's CASA	
10:50 AM	Wei Liu	An overview of ongoing and prospective R&D activities at HiRES to advance MeV-UED instruments	
11:15 AM	Felix Olise	The Stewardship of the Nigerian Tandem Particle Accelerator: Preparing Ground for Expertise in Minerals Prospecting and Radiation Therapy	

OM-06		Title: Facility Updates III	Trinity Central
		Chair: Thomas Tunngley	
10:00 AM	Gurazada Ravi Prasad	CAIS AMS Status Report	
10:20 AM	Jian Wang	Control System Upgrade for ANSTO's 2MV STAR Tandetron Accelerator	
10:40 AM	John Wilkinson	Center for Accelerator Mass Spectrometry Status Report	
11:00 AM	David Wright	Lab update and future neutron facilities at AWE	

CAARI 2024 SPEAKER SCHEDULE SUMMARY - WEDNESDAY, JULY 24, 2024

NP-11		Title: Nuclear Astrophysics, I	West Fork I
		Chair: Dan Bardayan	
10:00 AM	James deBoer	The $^{13}\text{C}(\alpha, n)^{16}\text{O}$ differential cross section	
10:20 AM	David Neto	Measuring the cross section of the $^{15}\text{N}(\alpha, \gamma)^{19}\text{F}$ reaction using a single-fluid bubble chamber	
10:40 AM	Karina Martirosova	Progress Towards a Single Atom Microscope (SAM) for Nuclear Astrophysics	
11:00 AM	Maria Anastasiou	Measuring the $^{88}\text{Sr}(\alpha, n)^{91}\text{Zr}$ reaction cross section with Accelerator Mass Spectrometry	
11:20 AM	Dan Bardayan	First measurements with the Enge split-pole spectrometer at the Notre Dame Nuclear Science Lab (NSL)	

IA-04		Title: Advances in Accelerator-Based Sterilization Systems and Blood/Food Irradiators	West Fork II
		Chair: Leo Fifield	
10:00 AM	Adam Gabriel	The next evolutionary steps of the Rhodotron, introducing high power solid state amplification technology in the RF chain and digitalization of E-Beam and Xray systems.	
10:15 AM	Micahel Paul Christofaro	Reveam, Inc.'s Groundbreaking Application of Accelerator Systems to Treat Food Using their Patented Electronic Cold Pasteurization (ECPTM) Process	
10:30 AM	Marcos Ruelas	The impact of recent advances in accelerator sterilization and irradiator systems on cost, adoption, and availability.	
10:55 AM	Leo Fifield	Toward Use of Low Energy Electron Beams for Sterilization	
11:10 AM	Matt Pharr	Effects of Radiation-Driven Changes in Physical Properties of Polymers	

MC-NE-01		Title: Nuclear Energy: Basics and Advances	Post Oak
		Chair: Yongqiang Wang	
10:00 AM	Peter Hosemann	Electrical Power from Nuclear Fission: A Tutorial for Conventional and Advanced Reactors	

11:30 - 1:00 PM

Lunch (on your own)

RE-04		Title: Combination of Irradiation + Stress + Corrosion, I	Elm Fork I
		Chair: Charles Hirst & Franziska Schmidt	
1:00 PM	David Lunt	Synergistic irradiation-thermomechanical loading with integrated strain mapping capability	
1:30 PM	Laurence Skidmore	Developing synergistic irradiation-thermomechanical testing capability	
1:50 PM	Timothy Lach	Multimodal characterization of radiation and transmutation extremes in SNS components	

CAARI 2024 SPEAKER SCHEDULE SUMMARY - WEDNESDAY, JULY 24, 2024

AF-05		Title: Accelerator Facilities II	Elm Fork II
		Chair: Fuhao Ji	
1:00 PM	Mark Palmer	Recent Scientific and R&D Highlights from Brookhaven's Accelerator Test Facility (ATF)	
1:30 PM	Xueying Lu	The Argonne Wakefield Accelerator (AWA) facility and recent advances in two-beam acceleration	
2:00 PM	Adrien Talon	Cable installation management for the Advanced Light Source Upgrade (ALS-U) Project	

IA-05		Title: Industrial Neutron and X-Ray Imaging and Radiography Devices and Applications	Trinity Central
		Chair: Jay Theodore Cremer	
1:00 PM	Andrey Valentinovich Mishin	High Energy Sources Development and Production at Varex Imaging Corporation	
1:25 PM	Youngseok Lee	The utilization of fast neutrons in radiography	
1:50 PM	Charles Gary	Fast and Thermal Neutron Imaging for Industrial Radiography with Neutron Generators	

NP-12		Title: Nuclear Astrophysics, II	West Fork I
		Chair: Dan Bardayan	
1:00 PM	Ania Kwiatkowski	Advances in mass spectrometry towards the r-process path at TITAN-TRIUMF	
1:20 PM	Adrian A Valverde	Precision mass measurements with the Canadian Penning Trap for the astrophysical r-process	
1:40 PM	Mallory Smith	Creating New Isotopes at FRIB for Experiments in Nuclear Astrophysics	
2:00 PM	Andrea Richard	Experimentally Constrained $^{93}\text{Sr}(n,\gamma)^{94}\text{Sr}$ Cross Section via the Surrogate Reaction Method	

NST-06		Title: Focused Ion Beams	West Fork II
		Chair: Michael Titze & Alex Belianinov	
1:00 PM	Luca Basso	Development of diamond platforms for quantum sensing by ion implantation	
1:30 PM	Shane Cybart	Nanofabrication of Josephson Junctions with Focused Helium Ion Irradiation	
2:00 PM	Harriet Ahlgren	Ultra-low energy ion implantation as a powerful tool to create new nanostructures within 2D materials	

MC-VAC-02		Title: Vacuum Class II	Post Oak
		Chair: John Screech	
1:00 PM	John Screech	Ultra-High Vacuum Seminar: Part 2 of 2 Session Series	

3:30 - 9:00 PM	Excursion - Billy Bob's	
-----------------------	--------------------------------	--

CAARI 2024 SPEAKER SCHEDULE SUMMARY - THURSDAY, JULY 25, 2024

Plenary Sessions		Rio Grande
	PS-03	
9:00 AM	Cathy Sue Cutler	Accelerator Production of Medical Radionuclides

9:45 - 10:00 AM	Break
-----------------	-------

General Sessions	
------------------	--

RE-02		Title: Irradiation Effect in Low-Dimensional Materials and Devices	Elm Fork I
		Chair: Yang Tan	
10:00 AM	Xinqing Han	Underlying Mechanism of Structural Transformation between GaSb and GaAs Response to Intense Electronic Excitation	
10:30 AM	Yongqiang Wang	Exploring 2D graphene as atomic armor to protect uranium from ambient corrosion	
11:00 AM	Yang Tan	Ultra-thin crystalline film prepared by ion irradiation	
11:15 AM	Tristan Olsen	Mechanisms of Ion Irradiation Induced Ordering in Amorphous TiO ₂ Nanotubes: Effects of Ion Mass and Energy	

MA-01		Title: Developments in Medical Accelerator Technology and Applications	Elm Fork II
		Chair: Martin Bues	
10:00 AM	Christopher PJ Barty	FLASH Radiotherapy and Precision X-ray Imaging enabled by Distributed Charge Compact Accelerators	
10:20 AM	Naresh Deoli	Electron beam optimization on a modified Varian clinical linear accelerator for FLASH preclinical studies at RARAF	
10:40 AM	Homeira Faridnejad	Dosimetry calibration for low-energy protons (2-4 MeV) using Gafchromic film dosimeters	
11:00 AM	Alexander Dunaevsky	Neutron Beam System for Accelerator-based Boron Neutron Capture Therapy	

AMP-01		Title: Atomic Collisions: Fundamental Processes & Applications	Trinity Central
		Chair: Sylwia Ptasinska	
10:00 AM	Dipayan Chakraborty	Development of a velocity map imaging spectrometer and its application in understanding the dynamics of low energy electron-molecule collisions.	
10:30 AM	Javier Miranda	L X-ray production cross sections of Ag induced by the impact of ¹² C ³⁺ and ¹³ C ³⁺ ions	
11:00 AM	Felix Olise	Calculated He ⁺ Induced L X-ray Production Cross Sections for Rare Earth Elements	

CAARI 2024 SPEAKER SCHEDULE SUMMARY - THURSDAY, JULY 25, 2024

TA-01		Title: Teaching with Accelerators	West Fork II
		Chair: Andy Roberts & Graham F Peaslee	
10:00 AM	Andy Robert	Undergraduate training and research with 400 keV electrons at Minnesota State University	
10:15 AM	Anthony Miller	Undergraduate Training and Research Involvement on the St. Andre 9SDH 3-MV Tandem Accelerator at the University of Notre Dame	
10:35 AM	Paul Ellison	University of Wisconsin Isotope Production HIPPOCampus Summer School	
10:55 AM	Rahul Mehta	An Undergraduate Advanced Lab teaching: Measurement and analysis of Ions and Photons	
11:15 AM	Raquel Gonzalez-Arrabal	Teaching activities with accelerators at the Universidad Politécnica de Madrid in Undergraduate and Graduate Programs	

IBTM-02		Title: Light Element Detection Using IBA	Post Oak
		Chair: Mikko Laitinen	
10:00AM	Masoud Dialameh	Elemental Quantification of Carbon Nanotube (CNT) Pellicles for EUV Lithography Applications	
10:25 AM	Kristina Komander	Investigating hydrogen in nanoscale transition metal hydrides with high-energy ion beams	
10:50 AM	Lyudmila Goncharova	Hydrogen thin film standards for high-resolution hydrogen depth profiling	
11:05 AM	Mikko Laitinen	Detection of light elements by a ToF-ERD telescope	
11:20 AM	Charles Bowen	Development of a Compact Magnetic Backscattered Ion Beam Deflector System for Light Element Ion Microscopy	

**11:30 - 1:00
PM**

Lunch (*on your own*)

RE-08		Title: Radiation Effects in Nuclear Materials	Elm Fork I
		Chair: Andy Smith & David Lunt	
1:00 PM	Khalid Hattar	Development of In-situ Ion Irradiation Tools for Nuclear Engineering Applications: Lessons Learned and Future Directions	
1:30 PM	Tongjun Niu	Microshear deformation for evaluating effects of void swelling on mechanical properties of heavy ion irradiated metals	
1:45 PM	Chenyi Qu	Interfaces enhanced plasma irradiation resistance in CrMoTaWV/W multilayer films through blocking He diffusion	
2:00 PM	Alvaro Lopez Casalilla	Effect of surface orientation on blistering of copper under high fluence of keV hydrogen ion irradiation	
2:15 PM	Pengcheng Zhu	Effect of Mo on oxidation, irradiation and creep properties of FeCrAl alloys	

CAARI 2024 SPEAKER SCHEDULE SUMMARY - THURSDAY, JULY 25, 2024

AF-04		Title: Neutron generator-based technology for planetary science	Trinity Central
		Chair: Mauricio Ayllon Unzueta	
1:00 PM	Jani Reijonen	Neutron Generator for Space Applications: From Oil Field to Outer Space	
1:25 PM	Ann Parsons	The BECA and DraGNS Instruments for In situ Planetary Geochemistry	
1:50 PM	Craig Hardgrove	Exploring the Surface of Mars with Active Neutron Measurements on the Mars Science Laboratory Curiosity Rover	
2:15 PM	Emily Kaye Surry	Non-Destructive Interrogation using Associated Particle Imaging for Planetary Surface Missions	

NP-05		Title: Artificial Intelligence -Machine Learning Advancements and Applications, I	West Fork I
		Chair: Jakub Kvapil & Xuan Li	
1:00 PM	Xilin Zhang	Report on STREAMLINE collaboration	
1:25 PM	Yihui "Ray" Ren	Towards Realtime Neural Compression for Sparse Time-Projection Chamber Data	
1:50 PM	Chris Tennant	Graph Learning for Operation of Particle Accelerators	

SD-01 <i>(Session to run long)</i>		Title: Accelerator-Based Security & Defense Systems	West Fork II
		Chair: Joseph Bendahan & Arlyn Antolak	
1:00 PM	Amy Shiroma	Battery-Operated Linacs for Portable Threat Detection	
1:20 PM	James Hunter	How a 40 year old machine remains world class, characteristics and use of a Scanditronix M22 Microtron for industrial imaging	
1:40 PM	Igor Jovanovic	Tunable Intense High-Energy Photon Source Development and Testing	
2:00 PM	Andrea Schmidt	Portable Isotopic Assay via Nuclear Resonance Transmission Analysis Using a Short-Pulse Neutron Source	
2:20 PM	Saeed Assadi	Impact of Solid-State Pulsed Power on The Scorpius Multi-Pulsed Radiography Accelerator	

NBAT-01		Title: Neutron Production and Detection Methods	Post Oak
		Chair: Jason Dugger	
1:00 PM	Ryan Hedlof	Computational Techniques for Electrostatic Ion Accelerator Component Design and Optimization	
1:30 PM	Kevin Yim	Computational study of tungsten and depleted uranium photoneutron targets for a 20 MeV electron linear accelerator	
2:00 PM	Amber Guckes	Prediction of performance for a short, multi-pulse photoneutron source based on the NNSS Scorpius linear induction accelerator	

**2:30 - 3:00
PM**

Break

CAARI 2024 SPEAKER SCHEDULE SUMMARY - THURSDAY, JULY 25, 2024

RE-09		Title: Radiation Effects in Chemical and Biological Systems	Elm Fork I
Chair: Naresh Deoli			
3:00 PM	Alexandra Miller	Identification of an Epigenomic Signature of Mixed Field Neutron Exposure at Low Doses: Benefit to Military Operators in a Post-Nuclear Detonation	
3:20 PM	Sylwia Ptasinska	DNA damage as a probe to assess the dose rate and chemistry of low-temperature plasma radiation	
3:40 PM	Yuijie Chi	Simulation Study of Ionizing Radiation Effects on Biomolecular Structures	
4:00 PM	Rahul Mehta	Differential analysis of Normal Rat Leg Bones subjected to Space Conditions	
4:15 PM	Maxwell Omeje	Measurements of Radiological Health Risks to Students in Abo-Odo Ota, Nigeria	

MA-04		Title: Radioisotopes in Medicine	Elm Fork II
Chair: Cathy Sue Cutler & Sergey Chemerisov			
3:00 PM	Lauren McIntosh	Hot Stuff—producing At-211 for novel medical applications	
3:20 PM	Sergey Chemerisov	Accelerator Based Production of Mo-99: Target Design Considerations.	
3:40 PM	Shakilur Rahman	Photonuclear cross-section and yields of $^{100}\text{Mo}(g,x)^{99}\text{Mo}$, $^{100}\text{Mo}(g,np)^{98}\text{mNb}$, and $^{59}\text{Co}(g,xn; x=1-4)^{58-55}\text{Co}$ reactions with intermediate bremsstrahlung energies	
4:00 PM	Laura Lambert	The CERN-MEDICIS facility – An offline mass separation facility for the production of research medical radionuclides	

NP-07		Title: Artificial Intelligence -Machine Learning Advancements and Applications, III	West Fork I
Chair: Jakub Kvapil & Xuan Li			
3:00 PM	Alexander Scheinker	Online Autonomous Tuning of the FRIB Accelerator Using Machine Learning: DOE NP AI Project Status	
3:30 PM	Adam Carpenter	Machine Learning Tools for Improved SRF Operations at CEBAF	
3:55 PM	Nicholaos Tsoupas	An Induction type of Septum for the EIC	

ISM-01		Title: Special Topics on Ion Enhanced Synthesis and Modification	West Fork II
Chair: Anand Prakash Pathak			
3:00 PM	Anand Prakash Pathak	Studies on the gamma and swift heavy ion irradiation induced effects on the Resistive Switching Properties of Transition Metal Oxides	
3:30 PM	Tom Kubley	High Energy Wafer Implantation updates at the Tandem User Facility at Brookhaven National Lab	
4:00 PM	Barney Doyle	The new Pulsed Power Electron Gun (PPEG) at Sandia National Labs	

CAARI 2024 SPEAKER SCHEDULE SUMMARY - THURSDAY, JULY 25, 2024

IBTM-03		Title: Multiple Technique Analyses Including Ion Beams (TOTAL IBA)	Post Oak
		Chair: Iva Bogdanovic Radovic & Lyudmila Goncharova	
3:00 PM	Tiago Fiorini Silva	Bias and synergy in the self-consistent analysis of IBA data	
3:30 PM	Felix Junge	Fast simulation of ion beam analysis spectra using binary collision approximation	
3:50 PM	Sage Buchanan	Progress on Improving SIMS Quantification of Erbium Through the Development of Ion-Implanted Calibration Standards	
4:10 PM	Igor Usov	The Upgraded Ion Beam Analysis Capability at LANL	
6:00 - 9:00 PM	Networking Dinner		Hotel Terrace

CAARI 2024 SPEAKER SCHEDULE SUMMARY - FRIDAY, JULY 26, 2024

Plenary Sessions

Rio Grande

9:00 AM	CC	Conference Closing Ceremony
---------	----	-----------------------------

9:15 - 9:30 AM

Break

General Sessions

RE-05

Title: Combination of Irradiation + Stress + Corrosion, II

Elm Fork I

Chair: Franziska Schmidt & Charles Hirst

9:30 AM	Weiyue Zhou	Exploring Radiation-Corrosion Coupling in High-Temperature Molten Salt and Liquid Metal Environments through Proton Irradiation Studies
10:00 AM	Franziska Schmidt	Isolating the effects of beam heating in simultaneous irradiation-corrosion experiments
10:20 AM	Matthew Chancey	Development of microscale in-situ irradiation and corrosion experiment (Micro-ICE)

MA-03

Title: Medical Imaging and Real Time Adaptive AI in Particle Therapy

Elm Fork II

Chair: You Zhang & Anissa Bey

9:30 AM	Mingwu Jin	Prompt gamma imaging for particle therapy: from sparse sampling to AI
9:50 AM	You Zhang	AI-enabled Real-time Imaging for Adaptive Particle Radiotherapy
10:10 AM	Weiguo lu	Mid-range probing and range-guided adaptive particle therapy
10:30 AM	John Cesar	PET Image-Guidance for Conventional and FLASH Proton Therapy
10:50 AM	Anissa Bey	Advances in In Vivo Imaging for Particle Radiotherapy: A Topical Overview

IA-06

Title: Advanced Manufacturing of Industrial Accelerators and Power Supplies

Trinity Central

Chair: Matthew Coventry

9:30 AM	Vincent Ernst	On the Simulations and Control of Cockcroft-Walton Ladders
10:00 AM	Paul Groth	Managing Electric Fields in Compact Accelerator Environments
10:20 AM	Amirari Diego	Split Structure Manufacturing of Compact Accelerators for Industrial Applications
10:40 AM	Yunlong Chi	Development of 10 MeV electron linear accelerator for space environment simulation

CAARI 2024 SPEAKER SCHEDULE SUMMARY - FRIDAY, JULY 26, 2024

NP-06		Title: Artificial Intelligence -Machine Learning Advancements and Applications, II	West Fork I
		Chair: Jakub Kvapil & Xuan Li	
9:30 AM	Cristiano Fanelli	AI-Assisted Detector Design at EIC	
10:00 AM	Brahim Mustapha	Machine Learning Tools to support Accelerator Operations	
10:20 AM	Torri Jeske	Machine learning based control systems for Nuclear Physics Experiments	
10:40 AM	Tyler Wheeler	2D Convolutional Neural Networks with Early Data Fusion for Rare Event Search in GADGET II TPC Data	
NBAT-03		Title: Neutron detector material development and beamline measurement/characterization facilities	Post Oak
		Chair: Patrick Feng	
9:30 AM	Alexander Long	Harnessing Event-Based Neutron Imaging Systems for Fast Neutron Imaging at LANSCE	
9:55 AM	Cody Parker	Neutron production and detection capabilities at Ohio University for basic science and applications	
10:10 AM	Gail Frances Hernandez Garcia	Scalable Manufacturing of Melt-Blended Organic Scintillators for High Efficiency Neutron Detectors	
10:25 AM	Patrick Feng	Net Shape Production of Organic Glass-Based Neutron Detectors	
10:40 AM	Peter Dyszel	New neutron detectors for beta-delayed neutron studies	
11:00 AM	Conference Concludes		

CAARI 2022 SPEAKER SCHEDULE SUMMARY - POSTER SOCIALS

5:00 - 7:00 PM	POSTER SOCIAL -- Monday, 07/22/2024	Grand Ballroom
-----------------------	--------------------------------------------	-----------------------

Topic Code	Presenter	Title
AA-IBTM-01	Anthony Miller	Homogenous and Robust Gypsum-Based Standard Materials for Trace Element Analysis by PIGE/PIXE
AA-IBTM-02	Mikko Laitinen	Required for novel semiconductor materials: ToF-ERDA spectrometer
AA-IBTM-02	Patrick Kirscht	Lithium depth profiling with proton beam NRA
AA-IBTM-03	Devesh Bhosale	Ion Resonance Energy Coupling using Induction Field
AA-IBTM-03	Sage Buchanan	A Multimodal Approach Towards Advancing the Characterization and Analysis of Erbium
AA-IBTM-03	Taya Sailza	Investigation of Elemental concentration in Olivine using PIXE, EDAX, and XRF.
AA-IBTM-04	Felix Junge	Low energy ion-solid interactions: a quantitative experimental verification of binary collision approximation simulations
AA-NBAT-02	Galina Yakubova	Advancements in field measurement of soil composition: Introducing the tagged neutron technique mobile system
AC-AF-02	Ihor Ihnatiev	Suppression of X-ray radiation from a 2 MV electrostatic ion accelerator
AC-AF-05	Mark Harrison	Improving Charge Exchange Performance in a Tandem Accelerator through Simulations
AP-IA-02	Rudolf Rosch	Characterization of a X-ray flat panel for ELSA facility
AP-IA-03	John Tolar	Compensated Neutron Logging with nGen® D-D Neutron Source
AP-IA-05	Nerine Cherepy	MeV Neutron and X-ray Imaging Radiography and Computed Tomography using Advanced Scintillators
AP-SD-03	Caryanne Wilson	Comparison of Neutron Generator Output Estimate Using a LaBr3 and an Organic Scintillator
AR-ISM-01	Beatriz Elizabeth Fuentes	Ongoing research on surface modification by low energy protons
AR-ISM-01	Olakunle Oluwaleye	Effects of Induced Structural Modification on Properties of V ⁺ Ion implanted RF - Magnetron Sputtering Deposited ZnO Thin Films of thickness 120 nm on borosilicate glass substrates
AR-NST-01	Benli Jiang	Real-time In-situ and Post-facto Study of the Mechanisms of Ion Beam Nanopatterning: Angle Dependence and Stress Behavior
AR-NST-01	Wei Jing Chen	Investigation of Wrinkling Structure in Polymer Thin Film After Ion Bombardment
AR-NST-05	Ella Schneider	Single Ion Multispecies Positioning at Low Energy for Fabrication of Quantum Technologies
AR-RE-01	Soumya Sahoo	Synthesis of topological surface and superconductivity via implantation of Sn into InSb crystal
AR-RE-01	Thai Hang Chung	Measurements of radiation tolerance of Superlattice (Al)GaAs by Positron Annihilation Spectroscopy
AR-RE-01	Vitalij Kovalevskij	High energy ion implantation for photoconducting terahertz switches
AR-RE-03	Bill Tominey	CaRBoN Ceramic for Ultrahard, Ultralightweight and Neutron Radiation Resistant Applications
AR-RE-06	Oleksandr Morozov	Temperature range of deuterium retention from ferritic-martensitic steel implanted deuterium at 100K and 300K V.I. Zhurba, O. Morozov, V.O. Progoaleva