

## CAARI 2022 SPEAKER SCHEDULE SUMMARY - MONDAY, OCTOBER 31, 2022

Plenary Sessions		Kincaid
	<b>PS-AP-01</b>	
8:45 AM	Bill W. Loo	FLASH: a new paradigm in cancer radiation therapy and novel technology for its clinical translation

9:30 - 10:00 AM	Break	Eagles/Chilton
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General Sessions		
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IBTM-01		Title: MeV SIMS and IBA	Kincaid
		Chair: Melanie J Bailey	
10:00 AM	Marko Barac	Optimization of MeV ToF SIMS in the low primary ion beam energy mode for the analysis of inorganic materials	
10:30 AM	Mritunjaya Parashar	Probing the Ion Migration in 3-D Triple-Cation Perovskite Solar Cells via Rutherford Backscattering Spectrometry	
10:50 AM	Darshpreet Kaur Saini	Trace-elemental analysis of herbal plant leaves using Particle Induced X-ray Emission	

IA-01		Title: Geo-Physical and Non-Destructive Testing Applications	Quarter
		Chair: Jani Reijonen	
10:00 AM	Brian Jurczyk	Compensated Neutron Logging Tool Using nGen® D-D Neutron Generator for Am-Be Replacement	
10:30 AM	Richard J Radtke	Finding hydrocarbons with neutrons: The physics and technology of neutron-induced gamma-ray spectroscopy in the oil patch and beyond	
11:00 AM	Marie Quentin Schindler	Effect of Hydrogen gas on the field emission properties of carbon nanotubes film	

SP-01		Title: Nuclear Astrophysics I	Palomino
		Chair: Dan Bardayan	
10:00 AM	Tamas Aleksei Budner	ONe Nova Nucleosynthesis Studies Using $^{31}\text{Cl}$ $\beta$ -Delayed Proton Decay	
10:18 AM	Federico Portillo	Experimental study of $^{19}\text{Ne}$ excited states relevant for classical novae using the Enge split-pole spectrograph at TUNL	
10:36 AM	Rebecca Toomey	ODESA and the $^{18}\text{O}(\alpha, n)^{21}\text{Ne}$ Reaction	
10:54 AM	Sudarsan Balakrishnan	Study of states near $E_x=6$ MeV in $^{18}\text{Ne}$ for the $^{14}\text{O}(\alpha, p)^{17}\text{F}$ reaction rate	
11:12 AM	Daniel Robertson	The CASPAR underground facility for nuclear astrophysics research, results and future directions	

NST-01		Title: Focused Ion Beam Implantation for Defect Centers and Sensing - a Sandia Perspective	Arabian
		Chair: Edward S Bielejec	
10:00 AM	Michael Titze	Focused Ion Beam Capabilities for Solid-State Color Center Formation at Sandia's Ion Beam Laboratory	
10:23 AM	Aaron Katzenmeyer	Fabrication of Novel Ion Sources for Nanoimplantation	
10:46 AM	Vignesh Chandrasekaran	Creation of Deterministic Single Photon Emitters by Focused Ion Beam and In-situ Photoluminescence	
11:09 AM	Yisheng Lei	Long range collective interactions of rare earth ion arrays precisely implanted inside photonic resonators	

## CAARI 2022 SPEAKER SCHEDULE SUMMARY - MONDAY, OCTOBER 31, 2022

AF-01		Title: Accelerator Facility Updates (major, larger scale)	Pioneer III
		Chair: Steve Lidia	
10:00 AM	Kei Fukushima	Beam Commissioning and Setup for the First User Experiments at FRIB's Advanced Rare Isotope Separator	
10:25 AM	Cody Parker	Radiation Effects Facility at the Texas A&M University Cyclotron Institute	
10:50 AM	Stefan Facsko	The European Ion Beam Centers Network RADIATE	
11:05 AM	Steven M. Lund	Workforce training in accelerator science and engineering provided by the US Particle Accelerator School and DOE Traineeships	

SSR-01		Title: SNEAP Status Reports I	Pioneer IV
		Chair: Mark Roberts	
10:00 AM	William Andrew Hollerman	New Developments at the Louisiana Accelerator Center	
10:20 AM	Edward Stech	Status Report for Notre Dame's Nuclear Science Laboratory	
10:40 AM	Chris R Westerfeldt	Laboratory Report discussing upgrades to the FN Tandem and the upgrading of the TUNL Low-Energy Nuclear Astrophysics Laboratory – Replacing the JN Van de Graaff with a new 2 MV Singletron	
11:00 AM	David Garton	ANSTO Centre for Accelerator Science Status Report	

11:30 -  
12:30 PM

Lunch

Eagles/Chilton

MA-03		Title: Recent advances in particle beam radiobiology and radiochemistry	Quarter
		Chair: Wei Liu	
12:30 PM	Michael Story	The future of radiotherapy is charged particles: Exploiting physics and biology for precision medicine	
12:55 PM	Paul Wilson	Charged particle radiosensitization and radioprotection strategies: flip of a coin	
1:20 PM	Wei Liu	LET-Based Proton Planning - From Development to Clinical Implementation	
1:45 PM	Sergey Chemerisov	Design and Execution of Experiments on Long Duration Irradiation of Uranyl Sulfate Solution for Mo-99 production	

SD-01		Title: Security and Defense	Palomino
		Chair: Richard Greco	
12:30 PM	Andrew Jarrett	High Performance Silicon Drift Detectors for synchrotron applications	
12:50 PM	David A. Alexander	RSim: A Monte Carlo simulation application with CAD capability, Geant4 for radiation modeling, and visualizable mesh scoring	
1:10 PM	Abbas Johar Jinia	Photofission Neutron Detection with Neural Network based Digital Pulse Processing	

## CAARI 2022 SPEAKER SCHEDULE SUMMARY - MONDAY, OCTOBER 31, 2022

NST-04		Title: Nanoscale Pattern Formation Produced by Ion Bombardment of Solid Surfaces, Part I	Arabian
		Chair: Mark Bradley	
12:30 PM	Stefan Facsko	In-situ observation of ion-induced nanoscale patterning on a crystalline Ge(001) surface	
1:00 PM	Flyura Djurabekova	Atomistic mechanisms of nanoripple formation under tilted low energy ion irradiation	
1:30 PM	Hans Christian Hofsaess	Simulation of low energy ion-solid interactions using the binary collision approximation	

AF-02		Title: Accelerator Facilities (smaller scale at Universities, Industry, Medicine)	Pioneer III
		Chair: Bibhudutta Rout	
12:30 PM	Peter Linardakis	Developments at the Australian National University's Heavy Ion Accelerator Facility	
1:00 PM	Lawrence Henderson	Construction of an Electron Cyclotron Emission Imaging System	
1:30 PM	Lin Shao	Harnessing the Full Capacity of the Shady Oaks LINAC for Isotope Production	
2:00 PM	Bibhudutta Rout	Ion Beam Irradiation and Analysis facilities at the University of North Texas	

STDS-01		Title: SNEAP Technical Developments I	Pioneer IV
		Chair: Chris R Westerfeldt	
12:30 PM	Stephane V Melanson	Modification of an H <sup>-</sup> Ion Source for the Extraction of Negative and Positive Ions	
12:50 PM	Fares Boussahoul	Preparation for the transfer of accelerator laboratory and installation of the new 5 MV Tandatron at RBI	
1:10 PM	Prashanta Niraula	Conducting Self-Ion Irradiation Experiments in Candidate Core Structural Materials at the Michigan Ion Beam Laboratory	
1:30 PM	David Button	Uplifting ANSTO Tandem Accelerator Facilities for the Future	

2:00 - 2:30  
PM

Break

Eagles/Chilton

ISM-02		Title: Mechanical properties of ion irradiated complex alloys	Kincaid
		Chair: Lukasz Kurpaska	
2:30 PM	Pareige Cristelle	Understanding of the evolution of mechanical properties of steels under irradiation: micromechanics and microstructure	
2:50 PM	Fabio Di Fonzo	The key role of heavy ion irradiation in the development of ductile amorphous oxide barrier coatings for next generation nuclear power plants	
3:10 PM	Sergei Dudarev	Computing stress and strain fields resulting from exposure of materials to neutron or ion irradiation: from microscopic models to FEM of reactor components	
3:30 PM	Tomasz Stasiak	Development and mechanical properties of multicomponent thin films from the Cr-Hf-Mo-Ta-W system designed for harsh environments	
3:45 PM	Lukasz Kurpaska	Short-range order in ion-irradiated NiCoCr medium entropy alloys	

## CAARI 2022 SPEAKER SCHEDULE SUMMARY - MONDAY, OCTOBER 31, 2022

TD-02		Title: Emerging Accelerator Technologies	Quarter
		Chair: Qing Ji	
2:30 PM	Robert Joel England	On-chip Integrated Laser-driven Particle Accelerators	
2:52 PM	Lieselotte Obst-Huebl	Laser-ion sources for multidisciplinary research applications	
3:14 PM	Thomas Schenkel	Compact Multi-beam Radio-frequency Linear Ion Accelerators	
3:26 PM	Stephanie Stodola	Recent Activity at National Electrostatics Corp	
3:38 PM	Marissa Kranz	D-Pace UniBEam Beam Profiler Integration and High Beam Power Scan Data at the University of Washington Medical Cyclotron Facility	
3:50 PM	Kalpak Dighe	K-Modules: Capacitive energy modules for pulsed power applications	

SP-02		Title: Nuclear Astrophysics II	Palomino
		Chair: Dan Bardayan	
2:30 PM	Erin Good	$\beta$ -Oslo measurements for the r-process with next generation accelerator facilities	
2:50 PM	Biying Liu	Mass measurements for the r-process using Canadian Penning Trap	
3:10 PM	Caleb Marshall	Study of $^{86}\text{Kr}(\alpha, n)$ in inverse kinematics using SECAR	
3:30 PM	Rob Walet	High power DC and nanosecond pulsed 2 MV accelerator for light ions	
3:45 PM	Dan Bardayan	New Tools for Explosive Nucleosynthesis Studies at the Notre Dame Nuclear Science Lab (NSL)	

NST-05		Title: Nanoscale Pattern Formation Produced by Ion Bombardment of Solid Surfaces, Part II	Arabian
		Chair: Mark Bradley	
2:30 PM	Karl Ludwig	Coherent X-ray Scattering as a New Tool for the Study of Ion Beam Nanopatterning	
3:00 PM	Mark Bradley	Theory of Nanoscale Patterns Produced by Ion Bombardment of Solid Surfaces	
3:30 PM	Jean Paul Allain	Compositional Changes Under Low-Energy Ion Beam Irradiation of Disordered Alloys	

TA-01		Title: Undergraduate Education and Experiments with Accelerators	Pioneer III
		Chair: Kevin Woller	
2:30 PM	Kevin Benjamin Woller	2022 First Year Pre-Orientation Program activities of the MIT Department of Nuclear Science and Engineering	
2:55 PM	Lauren McIntosh	Undergraduate Research at the Cyclotron Institute at Texas A&M	
3:20 PM	Rahul Mehta	Enhancing the Undergraduate Advanced Lab experience: Measuring Photons and Ions	
3:40 PM	Daniel Keith Marble	Nuclear Labs for Undergraduates and High School Students Using a Low-Cost Gamma Spectroscopy System and Other Educational Activities at Tarleton's Nuclear Laboratory	

## CAARI 2022 SPEAKER SCHEDULE SUMMARY - MONDAY, OCTOBER 31, 2022

RE-01		Title: Accelerator-based Irradiation capabilities for Nuclear Energy Research	Pioneer IV
		Chair: Andy Smith	
2:30 PM	Simon Martin Pimblott	Experiment with simulation studies of heavy ion radiolysis of aqueous systems	
3:00 PM	Franziska Schmidt	In situ monitoring of heavy liquid metal and molten salt corrosion under simultaneous irradiation with particle-induced x-ray emission (PIXE) spectroscopy	
3:15 PM	Hongliang Zhang	High Throughput Study of Hardening, Void Swelling and Corrosion in Ion Irradiated High Entropy Alloys	
3:45 PM	John Miller	Using a Small Pelletron to Simulate Space Radiation for CAPE	
4:15 - 6:00 PM	Poster Session 1		Eagles/Chilton

## CAARI 2022 SPEAKER SCHEDULE SUMMARY - TUESDAY, NOVEMBER 1, 2022

Plenary Sessions		Kincaid
	<b>PS-AC-01</b>	
8:45 AM	Kenneth Herwig	Spallation Neutrons and Applications

9:30 - 10:00 AM	Break	Eagles/Chilton
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### General Sessions

RE-06		Title: Radiation Effects in Nanostructured Materials	Kincaid
		Chair: Feng Ren	
10:00 AM	Chenxu Wang	Radiation effects in MAX phases	
10:25 AM	Ye Yuan	The contribution of irradiation effect in ferromagnetic semiconductors	
10:45 AM	Yang Tan	Self-powered and flexible gas sensor using defect-engineered 2D heterostructure	
11:10 AM	Feng Ren	Enhanced (Photo)electrocatalytic properties by ion beam technology	

IA-02		Title: Advanced Accelerators for Medical/Insect/Pharmaceutical Sterilization and Blood/Food Irradiators	Quarter
		Chair: Jennifer Elster	
10:00 AM	Jennifer Elster	Reducing the Radiological Risk by Encouraging Electron Beam and X-Ray Adoption	
10:30 AM	Chip Starns	The use of Electronic Cold-Pasteurization (ECP) as a means of reducing movement and development of plant pests and pathogens	
11:00 AM	David Staack	Comparison and Selection of Irradiation Sources for Medical Device Sterilization and Environmental Applications	

SP-03		Title: Atomic Nuclear and Molecular techniques for fundamental physics I	Palomino
		Chair: Ronald Garcia Ruiz	
10:00 AM	Jaideep Taggart Singh	The Nuclear Pear Factory	
10:30 AM	Sebastian Rothe	Infrastructure for radioactive molecule production at CERN-ISOLDE	
10:50 AM	Mia Au	Developments for actinide molecular ion beams at CERN-ISOLDE	
11:10 AM	Andy Hannaman	Optimized high-throughput analysis technique for a dual-axis duo-lateral position-sensitive silicon detector for excellent position and energy resolution	

NST-06		Title: Nanoscale Pattern Formation Produced by Ion Bombardment of Solid Surfaces, Part III	Arabian
		Chair: Mark Bradley	
10:00 AM	Carmen S. Menoni	The multiple impactful applications of ion beam bombardment	
10:30 AM	Farida Ahmed Selim	Defect engineering in Ga <sub>2</sub> O <sub>3</sub> by ion beam irradiation and band gap tuning	
11:00 AM	Scott A. Norris	Isotropic swelling as a mechanism for nanopattern suppression	
11:15 AM	Tyler Evans	Physical mechanisms affecting critical angle for nanopatterning in irradiated semiconductors	

## CAARI 2022 SPEAKER SCHEDULE SUMMARY - TUESDAY, NOVEMBER 1, 2022

SD-02		Title: Neutron Generators Security and Defense	Pioneer III
		Chair: Matt Coventry	
10:00 AM	Philip Martin	Neutrons for Border Security: A Customer's Viewpoint	
10:25 AM	Martin Smith	Cargo Inspection Using Neutron Generators	
10:50 AM	Michael King	Vehicle-based and Robotic Active Neutron Interrogation Systems for Threat Detection	
11:15 AM	Jay Theodore (Ted) Cremer	DT Neutron Generators for Security and Defense Applications	

STDS-02		Title: SNEAP Technical Developments II	Pioneer IV
		Chair: Dannie Steski	
10:00 AM	Mohin Sharma	Repairing of Rust Induced Vacuum degradation of a Switching Magnet Chamber	
10:20 AM	Barney Doyle	Calculating Charge State Distributions of Beams Accelerated by Tandem Accelerators	
10:45 AM	Mikko Laitinen	Laser-assisted negative ion production in caesium sputter negative ion source	

11:30 -  
12:30 PM

Lunch

Eagles/Chilton

IBTM-03		Title: Multiple technique analyses including ion beams (TOTAL IBA)	Kincaid
		Chair: Melanie J Bailey	
12:30 PM	Catia Costa	Sequential molecular and elemental imaging on a single tissue section using DESI and PIXE	
1:00 PM	Bostjan Jencic	Application of multiple ion beam analysis techniques in plant biology and nutritional science	
1:30 PM	Melanie J Bailey	Colocation of Lipids, Drugs, and Metal Biomarkers Using Spatially Resolved Lipidomics with Ion Beam Elemental Mapping	

RE-02		Title: Multiscale Studies of Irradiated Materials for Fusion Applications	Quarter
		Chair: Osman El-Atwani	
12:30 PM	Michael Philip Short	Beam-On Effects in Nuclear Materials for Generation IV Fission and Fusion Reactors	
1:00 PM	Nithin Mathew	Elucidating the interactions between Hydrogen/Helium with extended defects in Tungsten: An atomic-scale perspective	
1:30 PM	Eric Lang	Current and future advances in plasma-facing materials and experimental facilities to enable nuclear fusion	

SP-04		Title: Atomic Nuclear and Molecular techniques for fundamental physics II	Palomino
		Chair: Ronald Garcia Ruiz	
12:30 PM	Kieran Flanagan	Application of sensitive laser spectroscopy techniques in mass spectrometry	
1:00 PM	Mikael Reponen	Laser spectroscopy developments at IGISOL	
1:20 PM	Elisa Romero Romero	The novel way of Optical Spectroscopy towards the Super Heavy Elements: Laser Resonance Chromatography	
1:40 PM	Austin Abbott	Investigating Low Energy Heavy-Ion Response of sCVD Diamond Detectors	

## CAARI 2022 SPEAKER SCHEDULE SUMMARY - TUESDAY, NOVEMBER 1, 2022

NST-02		Title: Defect Centers in Wide Bandgap Substrates - Creation and Applications	Arabian
		Chair: Michael Titze	
12:30 PM	Christopher Lee Smallwood	Coherent Optical Spectroscopy Studies of Hidden Silicon-Vacancy Centers in Diamond	
12:55 PM	Kelsey Michelle Bates	Measuring Strain and Coherent Interactions in an Ensemble of Silicon-Vacancy Centers in Diamond	
1:20 PM	Stephen Michael Revesz	Effects of Ion Implantation Damage on Photoluminescence of Silicon-Vacancy Centers in Diamond	

TA-02		Title: Graduate Programs I	Pioneer III
		Chair: Daniel Keith Marble	
12:30 PM	Sally Fisher Hicks	Probing nuclei with neutrons at UKAL through research designed to maximize student contributions and collaborations	
1:00 PM	Zaijing Sun	Developing a Remote Gamma Spectra Collection System for Radiation Sciences at the University of Nevada Las Vegas	
1:25 PM	William Andrew Hollerman	Teaching a Graduate-Level Ion Beam Course at the Louisiana Accelerator Center	

SSR-02		Title: SNEAP Status Reports II	Pioneer IV
		Chair: Chris R Westerfeldt	
12:30 PM	Gurazada Ravi Prasad	Status report of CAMS and SSAMS at CAIS, University of Georgia	
12:50 PM	Josh Hlavenka	Upgrading IVEM Tandem Accelerator at Argonne National Laboratory	
1:10 PM	Dannie Steski	Brookhaven National Laboratory Tandem Van de Graaff Facility	
1:30 PM	Mark Roberts	Update on the Woods Hole Oceanographic Institution's Accelerator Mass Spectrometry Systems	

2:00 - 2:30 PM

Break

Eagles/Chilton

STDS-03		Title: SNEAP Open Forum Session	Kincaid
		Chair: Mark Roberts	
2:30 PM		Open Forum	

MA-02		Title: FLASH Accelerators and Delivery Systems	Quarter
		Chair: Eric S Diffenderfer	
2:30 PM	Eric S Diffenderfer	Adapting a fixed beam line for pre-clinical proton FLASH investigations	
2:50 PM	Mahbubur Rahman	Electron FLASH Radiotherapy Platform: Characterization, Safety, and Validation	
3:10 PM	Francois Vander Stappen	Proton FLASH Accelerators: From high intensity beam to clinical relevance	
3:30 PM	Alexander Smirnov	X-Ray Flash Radiotherapy System Based on A High Power Electron Linac	
3:42 PM	Takuto Miyoshi	Beam Delivery Tuning and Capability Estimation of Hitachi Synchrotron-based Particle Beam Treatment Systems for Ultra-high Dose Rate Radiotherapy	
3:54 PM	George Gillespie	Modeling the Beams and Transfer Lines of the McLaren Proton Therapy Center	



## CAARI 2022 SPEAKER SCHEDULE SUMMARY - TUESDAY, NOVEMBER 1, 2022

SP-07		Title: Neutron Physics I - Precision Measurements I	Palomino
		Chair: Matthew J Devlin	
2:30 PM	Andrew Leland Cooper	Tomorrow's experimental capabilities, today: Proof-of-principle neutron capture experiments in inverse kinematics at LANSCE	
3:00 PM	Joey Gordon	Measurements of the $^{56}\text{Fe}(n,n'\text{g})$ reaction at GENESIS	
3:30 PM	Thomas Baumann	Next Generation Fast Neutron Detector With High Position Resolution	

WKS-IBA		Title: IBA - Ion Beam Analysis Workshop Session	Arabian
		Chair: Yongqiang Wang	
2:30 PM		Workshop Session	

TA-03		Title: Graduate Programs II	Pioneer III
		Chair: Daniel Keith Marble	
2:30 PM	Lauren McIntosh	Graduate Program at Texas A&M University Cyclotron Institute	
3:00 PM	Andrew Rogers	Nuclear Science Education at the UMass Lowell Radiation Laboratory	
3:30 PM	Daniel Robertson	Graduate student teaching and research at the Nuclear Science Laboratory of Notre Dame	

RE-07		Title: In-situ measurements of ion irradiation damage in materials	Pioneer IV
		Chair: Djamel Kaoumi	
2:30 PM	Farida Ahmed Selim	In-situ positron annihilation spectroscopy (iPAS)- A new tool for ion irradiation damage	
3:00 PM	Ryan Schoell	In-Situ Ion Irradiation and Compression of Micropillars inside a Transmission Electron Microscope	
3:30 PM	Djamel Kaoumi	Radiation tolerance of $\text{Fe}_3\text{O}_4$ evidenced by reversible order-disorder phase transformation through in situ ion irradiation in a TEM	

4:15 - 6:00 PM	Poster Session 2		Eagles/Chilton
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## CAARI 2022 SPEAKER SCHEDULE SUMMARY - WEDNESDAY, NOVEMBER 2, 2022

Plenary Sessions		Kincaid
	<b>PS-AR-01</b>	
8:45 AM	Mianzhen Mo	Recent pump-probe advancements to interrogate materials dynamics at ultra-fast temporal and atomic spatial resolutions

9:30 - 10:00 AM	Break	Eagles/Chilton
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General Sessions		
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IBTM-02		Title: Cultural Heritage/Forensic Science	Kincaid
		Chair: Claire Pacheco	
10:00 AM	Claudine Loisel	The use of AGLAE to identify the origin and production processes of French stained glass windows	
10:30 AM	Stewart Bragg Younger-Mertz	Ion Beam Analysis of Ancient North and West African Metals and Glass	
10:50 PM	Claire Pacheco	Converting New AGLAE IBA data into digital heritage objects	

MA-01		Title: Technological Developments in Medical Accelerator Technology and Future Aspirations	Quarter
		Chair: Martin Bues	
10:00 AM	Sergey V Kutsaev	Novel Accelerators for Linac-Based Radiotherapy	
10:25 AM	Niek Schreuder	Upright Particle Beam Therapy	
10:50 AM	Takamichi Aoki	Development of Variable-Energy Accelerator with Fixed Field for Particle Beam Therapy	
11:05 AM	Jonathan B. Farr	Design and Comparative Performance of a Proton Therapy Linac	

SP-08		Title: Neutron Physics II - Precision Measurements II	Palomino
		Chair: Matthew J Devlin	
10:00 AM	Maninder Singh	Neutron beta-decay studies at LANL	
10:25 AM	Justin Warren	Active target measurement of the $^{35}\text{Cl}(n, p)$ and $^{35}\text{Cl}(n, \alpha)$ cross sections utilizing a CLYC detector at The Edwards Accelerator Lab	
10:50 AM	Zachary Tobin	Measuring Alpha Induced Alpha Knockout Reactions Using the NIMROD $4\pi$ Detector Array at Texas A&M University	
11:10 AM	Nicholas Mendez	Simulations of the Multi-layer Active target for MoNA Experiments (MAME) with Garfield++	

RE-08		Title: Radiation Damage and Measurements	Arabian
		Chair: Yongqiang Wang	
10:00 AM	Lin Shao	A quantitative method to determine the region not influenced by injected interstitial and surface effects in ion-irradiated metals	
10:30 AM	Sviatoslav Ditalia Tchernij	Creation and characterization of diamond color centers by means of ion beam implantation	
11:00 AM	Ryan Rinderknecht	On the Use of SRAM Based Dosimeters to Measure LET and Fluence in Heavy Ion Facilities	
11:15 AM	Karra Vinod Kumar	Band gap modification of CVD grown few-layer MoS <sub>2</sub> under Swift heavy ion irradiation	

## CAARI 2022 SPEAKER SCHEDULE SUMMARY - WEDNESDAY, NOVEMBER 2, 2022

NBAT-01		Title: Neutron Scattering for Materials Science Research	Pioneer III
		Chair: Mathieu Doucet	
10:00 AM	Alessandro Mazza	Exploring quantum and correlated materials with neutron scattering	
10:30 AM	Naresh Chandra Osti	Neutron Study of Dynamics of Fluids of energy applications	
11:00 AM	Jeffrey M Klein	Electrode-electrolyte interfaces of ionic liquids probed by neutron reflectometry	

SD-03		Title: Detectors for Accelerator-Based Systems	Pioneer IV
		Chair: Nerine Cherepy	
10:00 AM	Ge Yang	Ultrawide Bandgap Ga <sub>2</sub> O <sub>3</sub> Sensor Materials for Harsh Environment Applications	
10:23 AM	Kimberly Pestovich	Scintillators for Accelerator Science	
10:46 AM	Shihua Huang	Qualifying LaBr <sub>3</sub> Detector Performance for the Mu2e Experiment at Fermilab Using the ELBE Accelerator	
10:59 AM	Nerine Cherepy	Lens-coupled MeV X-Radiography with Transparent Ceramic GLO Scintillators	
11:11 AM	Allan Xi Chen	A Compact Inexpensive Charged Particle Detector for Studying Nuclear Physics	
11:23 AM	Mihai Straticiu	YAP:Ce Crystals as Beam Monitor for CRYRING@ESR	

11:30 -  
12:30 PM

Lunch

Eagles/Chilton

MA-04		Title: Medical imaging in particle therapy	Kincaid
		Chair: Niek Schreuder	
12:30 PM	Niek Schreuder	New paradigms in particle therapy – DECT and Particle radiography	
12:48 PM	Xuanfeng Ding	In vivo imaging in the particle therapy	
1:06 PM	Anissa Bey	Assessment of a Radiological Imaging System Proof-of-Concept for Carbon Radiotherapy Real-Time Monitoring	
1:24 PM	Bhavini Singh	Cooling Flow Analysis of Accelerator Based Molybdenum-99 Production from Molybdenum-100 targets	
1:42 PM	Xuanfeng Ding	A journey to SPARC and future roadmap towards clinical implementation	

NST-03		Title: Focused Ion Beams for Irradiation and Implantation Applications	Quarter
		Chair: Alex Andrei Belianinov	
12:30 PM	Nazar Deegan	Ion implantation enabled solid-state platforms for quantum information processing	
12:53 PM	Milan Vicentijevic	Detection of Single Low-Penetrating Ions in Diamond	
1:05 PM	Gregor Hlawacek	Focused ion beam applications using gas field and liquid metal alloy ion sources	
1:28 PM	Hans Christian Hofsaess	Simulation of ultra-low energy ion implantation of 2D materials	
1:40 PM	Bryan Richards	Time-resolved magnetic microscopy of nanoparticles using nitrogen-vacancy centers in diamond	

# CAARI 2022 SPEAKER SCHEDULE SUMMARY - WEDNESDAY, NOVEMBER 2, 2022

SP-09		Title: Subatomic Physics - Latest Results	Palomino
		Chair: Thomas Baumann	
12:30 PM	Eilens Lopez Saavedra	Observation of an elusive Near-Threshold Proton Resonance in 11B	
1:00 PM	Benjamin W Asher	Development of a Triton source at Florida State University	
1:30 PM	Karen Esther Navarro	Advances in single barium ion capture and imaging for a barium tagging sensor for NEXT neutrinoless double decay searches	
1:45 PM	Diego Venegas Vargas	Updated <sup>235</sup> U Spectrum Measurement from the PROSPECT-I Data Set	

IBTM-04		Title: Ion and Micro Beam Analysis I	Arabian
		Chair: Robert Kolasinski	
12:30 PM	Todd Byers	Development and Testing of a System for Light Element Particle Induced X-Ray Emission	
12:45 PM	Mikko Laitinen	ToF-ERDA – New detectors, New spectrometer	
1:00 PM	Gunnar McAndrews Brown	Methods for External Proton Induced Gamma and X-ray Emission (PIGE and PIXE)	
1:15 PM	Mikko Laitinen	Elastic scattering and recoiling cross-sections measured by ToF-ERDA for low energy heavy ions	
2:00 PM	Charles Thomas Bowen	Minimum detectable levels of biologically relevant elements in thin film samples using PIXE	
2:15 PM	Gary Glass	Ion Beam Analysis of Elemental Constituents in Rat Organs – Male/Female Comparisons	

NBAT-02		Title: Neutron Production Detection and Applications	Pioneer III
		Chair: Jason Dugger	
12:30 PM	Clark Snow	Technology for portable fast neutron generators	
1:00 PM	Marie Quentin Schindler	Integration by simulation of carbon nanotube electron field emitter on a Penning ion source	
1:15 PM	Yongchi Xiao	Validation of a Digital Data Acquisition System for Pulsed Neutron (n,n') and (n,n'γ) Measurements at the University of Kentucky Accelerator Laboratory	
1:30 PM	Davorin Sudac	Development of a neutron-based method for the on-site fuel inspection	
1:45 PM	Krishnakumar Divakar Nangeelil	Determination of heavy elements in water and sediment along the Savannah river using Instrumental Neutron Activation Analysis	

RE-03		Title: Innovative Materials for Nuclear Energy	Pioneer IV
		Chair: Osman El-Atwani	
12:30 PM	Eda Aydogan	Radiation Effects and Thermal Stability in Ferritic Steels and High Entropy Alloys	
1:00 PM	Mohamed El Bakouri El Haddaji	An in silico method for the determination of crystalline defect relaxation volumes - bcc Fe as a test-case	
1:15 PM	Osman El Atwani	Novel Refractory High Entropy Alloys for Applications in Extreme Environments	
1:45 PM	Matthew Chancey	Interface effect of Fe and Fe <sub>2</sub> O <sub>3</sub> on the distributions of ion induced defects	

2:00 - 2:30  
PM

Break

Eagles/Chilton

# CAARI 2022 SPEAKER SCHEDULE SUMMARY - WEDNESDAY, NOVEMBER 2, 2022

AMP-02		Title: Atomic & Molecular Processes in Radiobiology and Chemistry	Kincaid
		Chair: Elahe Alizadeh	
2:30 PM	Sylvia Ptasinska	Dissociative Electron Attachment to Biomolecular Systems	
3:00 PM	Santosh KC	Towards the Ionizing Radiation-Induced Bond Dissociation Mechanism in Guanine and DNA Fragmentation: A Density Functional Theory Simulation	
3:15 PM	Gregory Lapicki	Univesal emirical and theoretical fits for K x-ray production cross sections	

MA-06		Title: Boron Neutron Capture Therapy	Quarter
		Chair: Sunil Krishnan	
2:30 PM	Hannah Koivunoro	Accelerator-based BNCT in Finland	
2:45 PM	Alexander Dunaevsky	Neutron Beam System for Accelerator-Based BNCT	
3:00 PM	Hiroshi Tsutsui	Current status of Sumitomo BNCT system NeuCure	
3:15 PM	Premkumar B. Saganti	An Approach for a Boron Proton Fusion Therapy (BPFT) - Assessment of Alpha Particles	
3:30 PM	Sang Cho	Prompt gamma ray imaging using cadmium telluride detectors for boron neutron capture therapy	
3:45 PM	Sunil Krishnan	Developing novel boron agents for BNCT	

WKS-VAC1		Title: Vacuum Workshop Session: Part 1	Palomino
		Chair: John Screech	
2:30 PM		Vacuum Workshop Session	

IBTM-05		Title: Ion and Micro Beam Analysis II	Arabian
		Chair: Robert Kolasinski	
2:30 PM	Peter Hosemann	The effect of precise and shallow helium implantation on materials	
3:00 PM	Gregor Hlawacek	Adding "color" to Helium Ion Microscopy images	
3:30 PM	Harsh Arya	Design of an electrostatic focusing system for low MeV multi-ion micro-beam	
3:45 PM	Robert Kolasinski	Ion and neutral time-of-flight spectroscopy for deciphering the composition and structure of plasma-facing materials	

TD-01		Title: Accelerator Technology for Climate, Energy and Security	Pioneer III
		Chair: Arun Persaud	
2:30 PM	Galina Yakubova	Neutron-gamma technologies for carbon sequestration assessments	
3:00 PM	Caroline Grace Egan	Quantifying Carbon Sequestration using Associated Particle Imaging	

## CAARI 2022 SPEAKER SCHEDULE SUMMARY - WEDNESDAY, NOVEMBER 2, 2022

RE-04		Title: Radiation effects in non-metallic materials	Pioneer IV
		Chair: Eric Lang	
2:30 PM	William J Weber	Effects of Electronic Energy Loss on Disordered Oxide Perovskites	
2:55 PM	Bai Cui	High-Entropy Carbide Ceramics in Nuclear Energy Applications	
3:20 PM	Joshua Michael Young	Exploration of the combined effects of displacement damage and total ionizing dose degradation in the LM741 operational amplifier using Si ion and electron irradiation	
3:45 PM	Hongliang Zhang	Radiation effects on interfacial phenomena in ceramics	

## CAARI 2022 SPEAKER SCHEDULE SUMMARY - THURSDAY, NOVEMBER 3, 2022

Plenary Sessions		Appaloosa
	<b>PS-PR-01</b>	
9:00 AM	Ronald Fernando Garcia Ruiz	Radioactive atoms and molecules for nuclear science

9:45 -  
10:15 AM

Break

Eagles/Chilton

General Sessions
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ISM-06		Title: Defect Engineering in Materials with Ion Beam Methods	Appalosa
		Chair: Eryang Lu	
10:15 AM	Maria Caterina Giordano	Nanopatterning 2D semiconducting layers for large-scale photon harvesting and nanoelectronics	
10:40 AM	Sergei Kucheyev	Radiation defect dynamics in semiconductors	
11:05 AM	Jason Trelewicz	Uncovering Radiation Stability Regimes in Nanoengineered Tungsten Alloys through In Situ Ion Irradiation Experiments	
11:30 AM	Wei Liu	Ion beam induced infrared color centers in silicon as quantum emitters and sensors of irradiation damage	

WKS-VAC2		Title: Vacuum Workshop Session: Part 2	Pioneer I
		Chair: John Screech	
10:15 AM		Vacuum Workshop Session	

AMP-01		Title: Atomic collisions: Fundamental processes and applications	Pioneer II
		Chair: Sylwia Ptasinska	
10:15 AM	Jefferson L Shinpaugh	Experimental and computational studies of nano-structured gold as a radiosensitizer for proton and carbon ion radiation	
10:45 AM	Wilson Hawkins	Doubly Differential Electron Yields from Proton and Carbon Ion Interactions with Gold Nanoparticles	
11:15 PM	Tyler David Ulrich	Radiative double-electron capture (RDEC) by $F^{9+}$ ions in collisions with single-layer graphene	
11:30 AM	Shahin Ahmed Abdel Naby	Electron-ion recombination rate coefficients for plasmas modeling	

IA-03		Title: High Brightness UV, X-ray, and Gamma-Ray Industrial Accelerator Systems and Applications	Pioneer III
		Chair: Sergey V Kutsaev	
10:15 AM	Alex Murokh	Laboratory Scale Light Sources	
10:45 AM	Christopher Barty	Extremely Brilliant Compton Sources and Potential Applications	
11:15 AM	Timur Shaftan	Overview of high-brightness light sources operating in an X-ray photon energy range	

## CAARI 2022 SPEAKER SCHEDULE SUMMARY - THURSDAY, NOVEMBER 3, 2022

RE-05		Title: Radiation Effects in Semiconductors and Complex Oxids	Pioneer IV
		Chair: Miguel Crespillo	
10:15 AM	Maik Kurt Lang	Investigating Radiation Effects in Oxides using State-of-the-Art Particle Accelerators	
10:40 AM	Joseph Graham	Cryo-Ionoluminescence in Amorphous Silica — Kinetics of Self-Trapped Excitons and Extrinsic Centers	
11:05 AM	Gihan Velisa	Response of defective $\text{KTaO}_3$ to inelastic interactions of ions	
11:30 AM	John Derek Demaree	Near-surface disorder in 4H-SiC induced by MeV light ion irradiation	

12:00 -  
1:00 PM

Lunch & Closing Remarks

Quarter



## CAARI 2022 SPEAKER SCHEDULE SUMMARY - POSTER SOCIALS

<b>4:15 - 6:00 PM</b>	<b>POSTER SOCIAL 1 -- Monday, 10/31/22</b>	<b>Eagles/Chilton</b>
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<b>4:15 - 6:00 PM</b>	<b>POSTER SOCIAL 2 - Tuesday, 11/1/22</b>	<b>Eagles/Chilton</b>
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*Posters will be presented both Monday & Tuesday evening*		
Topic	Presenter	Title
AMP-02	Tristan Gaddis	The Radiosensitization Effect of Pegylated Gold Nanoparticles in Prostate Carcinoma Cells with Proton Irradiation
AMP-02	Nichole Libby	Sensitization effects of In-Vitro Breast Epithelial cells to Proton Irradiation by PEG-coated Gold Nanoparticles
AMP-02	Ajay Sharma	First Experimental Verification of Einstein's $E=mc^2$ by Cockcroft and Walton: Re-visited
IBTM-02	Benjamin Lukk	Comparison of PIXE and XRF Results on Ancient Egyptian Bronze Artifacts
IBTM-02	Stewart Younger-Mertz	$\mu$ -PIXE Analysis of Ceramics Recovered during the Summer 2022 Excavations at the Spiro Mounds Archaeological Site, Le Flore County, Oklahoma
IBTM-03	Melanie Bailey	Exploring new methods to monitor proton beam damage for sequential elemental and molecular imaging on a single tissue section
IBTM-04	Jorden Matty	Investigation of the stopping power of energetic ions in liquid water
IBTM-05	Lyudmila Goncharova	Hydrogen detection using low and medium energy ions
IBTM-05	Hans Hofsaess	Simulation of MeV ion scattering including coincidence techniques for light ion depth profiling
IBTM-05	Patrick Kirscht	Improvement of light element analysis by external proton beam
IBTM-05	Stewart Younger-Mertz	Ion Beam Analysis of a Cerium(III) Tris[bis(trimethylsilyl)amido] Phosphine Oxide Crystal
ISM-02	Matheus Adam	Optical properties of SiGe nanocrystals in SiO <sub>2</sub> produced by ion implantation
ISM-02	Vipul Sharma	The Impact of SHI Irradiation on the Low-Temperature Dielectric Phase Transition in K <sub>2</sub> Bi <sub>4</sub> Ti <sub>4</sub> WO <sub>18</sub>
ISM-06	Felix Junga	Doping of 2D materials by Ultra-low Energy Eon Emplantation
ISM-06	Alexander Sten	Effect of Nitrogen Ion Incorporation into Indium Antimonide Nanoribbons
MA-06	Jacob Baxley	Simulation and Measurements for the $^{11}\text{B}(p,\alpha)^2\alpha$ Reaction Using a Multi-Detector Setup
NBAT-01	Jim Browing	The Liquids Reflectometer at the Spallation Neutron Source
NBAT-01	Mathieu Doucet	Time-resolved neutron reflectometry study of Li-mediated electrochemical nitrogen reduction
RE-04	John Demaree	XPS measurements of organic molecule degradation after exposure to MeV ion irradiation
RE-07	Thai hang Chung	in-situ Defect Characterization of Ion Irradiated Materials with Positrons
RE-08	Masanari Iwasaki	Anomalous phase transformation in swift heavy ion-irradiated $\delta$ -Sc <sub>4</sub> Hf <sub>3</sub> O <sub>12</sub>
RE-09	Mayur Khan	Band gap modification of CVD grown few-layer MoS <sub>2</sub> under Swift heavy ion irradiation
SD-01	Xianfei Wen	Detection of shielded special nuclear materials and other contraband by using portable, high-flux DD and DT neutron generators
SD-01	John Wilkinson	Light-Ion Production of Gold Radioisotopes from Natural Platinum Targets
SD-02	Colton Graham	Time-Resolved Digital Data Analysis for Neutron Active Interrogation

## CAARI 2022 SPEAKER SCHEDULE SUMMARY - POSTER SOCIALS

**\*Posters will be presented both Monday & Tuesday evening\***

Topic	Presenter	Title
STDS-01	George Burns	3 MeV Pelletron Facility at Sandia National Laboratories
STDS-02	Armin De Vera	Capability of 6MV Tandem Accelerator Facility at Sandia National Laboratories
TD-01	Luke Claycomb	Accelerator-Based Fusion With an Artificially Structured Boundary that Produces a Purely Magnetic Periodic Field
TD-01	Mary Anne Cummings	Designing Accelerator-Driven Experiments For Accelerator-Driven Reactors
TD-01	Devon Fischer	X-ray Spot Size Improvements and Challenges in the 7 MeV S-Band LINAC for NDT
TD-01	Carlos Ordonez	Accelerator-Based Fusion with Reduced Electronic Stopping Made Possible by an Artificially Structured Boundary
TD-01	Kelly Wood	Accelerator-Based Fusion Fuel Options for Using an Artificially Structured Boundary
TD-02	Mary Anne Cummings	Innovative Magnetron Power Sources for Superconducting Accelerators