NSSC-LANL Keepin Summer Program:
Participants

Ruby Araj, raised in Michigan and Jordan, graduated from the University of Michigan with a Bachelor's in nuclear engineering and a minor in computer science. Her passion for nuclear physics and computer science led her to pursue a career in experiment and research. As an undergraduate at UM, she built her research experience in fundamental physics and its applications. During her senior year, she joined the Detection for Nuclear Nonproliferation Group where she studied the directional dependence in organic crystals from a fission source. When she is not in the lab, Ruby enjoys karaoke and hiking.

Group: XCP-3 **Mentor**: Madison Andrews

Alexander Clark received a Bachelor's degree in Nuclear Engineering, with a minor in music, from Idaho State University in May 2014. Alex is in his fourth year of study at North Carolina State University towards a PhD in Nuclear Engineering. He and his advisor, John Mattingly, are researching data assimilation of nuclear cross sections applied to neutron multiplicity counting experiments. Alex began a long term, graduate internship at Los Alamos National Laboratory in February 2018. He and his mentor, Jeff Favorite, are researching sensitivity analysis and uncertainty quantification of the Feynman Y and Sm2.

Group: XCP-3 **Mentor**: Jeff Favorite

Phoebe DeVos-Cole is a junior at Chapman University where she is pursuing a degree in Political Science. Phoebe is from Mora, NM and has interned at LANL for the past two summers. This summer, she will be working on a research project concerning the Joint Comprehensive Plan of Action. After college, Phoebe plans to pursue a Master's degree in International Relations or a JD in International Law. She is a volunteer firefighter and in her spare time she enjoys hiking, horseback riding, traveling, and photography.

Group: NSIS **Mentor**: Joe Pilat

Jessica Elder is a senior at Worcester Polytechnic Institute, where she is majoring in mechanical engineering, minoring in physics, and obtaining a graduate certificate in nuclear engineering. She has machining experience from an REU, has studied topics such as the R&D of SCWRs through past coursework, and will likely complete her senior thesis in assessing reactor criticality with MCNP. She is from Upstate New York and enjoys reading and training for marathons in her free time.

Group: NEN-2 **Mentors**: Travis Grove, Jesson Hutchinson
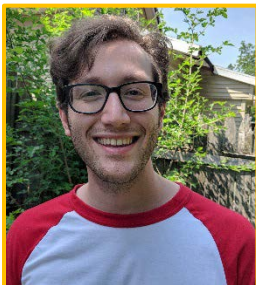
Brandon Elman is a PhD student studying nuclear structure at the National Superconducting Cyclotron Laboratory (NSCL) at Michigan State University. He is part of the Gamma Group, which performs experiments to increase understanding of the structure of exotic nuclei using γ-ray spectroscopy. Brandon conducted his thesis experiment at the NSCL, using GRETINA to measure γ rays from nucleon knockout reactions to probe intruder structures in 70Ni. The identification of intruder structures in exotic nuclei will help inform level densities models used in nuclear reaction rates in explosive environments.

Group: XTD-NTA **Mentor**: Joe Schmidt

Dominik Fritz is originally from Dallas and studies nuclear engineering at Rensselaer Polytechnic Institute (RPI). Dominik plan to obtain his bachelors' degree this coming fall and go straight into his PhD at RPI in nuclear engineering and science. His most recent research experience includes the design of a highly sensitive molybdenum critical experiment and the design of simulated nuclear fuel pellets. Additionally, Dominik has conducted research on the feasibility of Pu-238 production in the Advanced Test Reactor (ATR), modeling the effects of high energy radiation on semiconductor material and astrophysics. Aside from research, he enjoy hiking, gymnastics and playing with his dogs.

Group: NEN-2 **Mentors**: Theresa Cutler, Rian Bahran

Nathan Giha is a rising senior undergraduate in the nuclear engineering program at the University of Michigan. He performs research for the university and for the Consortium for Verification Technology under Professor Sara Pozzi. Nathan's work currently focuses on developing readout electronics for silicon photomultiplier (SiPM) arrays, for applications in nuclear nonproliferation and safeguards.

Group: NEN-1 **Mentor**: Marc Ruch

Kevin Glennon is a radiochemistry graduate student at Texas A&M where he works on projects related to nuclear forensics. He received his Bachelor of Science in chemistry from the University of Arkansas in the spring of 2015. His work in forensics involves the destructive analysis of low burnup irradiated fuels to measure their fission product isotopics via ICP-MS, as well as a forensic investigation of the PUREX process to measure the decontamination factors of previously unmeasured fission products.

Group: C-NR **Mentors**: Todd Bredeweg, Evelyn Bond

Ben Godfrey is a graduate student in physics working at UC Davis under Professor Mani Tripathi. He started working with silicon photomultipliers (SiPMs) as an alternative readout technique for noble element dark matter detectors. After interfacing with Sandia National Lab, this interest has expanded to include developing SiPM readout technology for fast neutron imagers.

Mentor: Eduardo Padilla, Sandia National Laboratory

Mara Grinder is a Graduate Student studying Nuclear Physics at the National Superconducting Cyclotron Laboratory at Michigan State University. She did her Bachelors of Science in Physics at Eastern Washington University. Between getting her bachelors and starting grad school, she interned at the Idaho National Laboratory for one year in nuclear nonproliferation. She is currently researching the structure of 38Si and investigating the B(E2) values for several excited states.

Group: P-27 **Mentor**: Hye Young Lee

Victoria Hagopian is currently a second year PhD student in nuclear engineering at Penn State where her research is in plasma formation modeling under Dr. Leigh Winfrey. While completing her undergraduate degree at NCSU (also in nuclear engineering), Victoria did research in plasma formation as well, which led her to her PhD research. For a senior design project, Victoria led a team performing research involving the super-critical fast-burst assembly GODIVA-IV. This later research is what led her to work for LANL as an intern for NEN-2 this summer.

Group: NEN-2 **Mentor**: Joetta Goda

Michael Hua graduated from the University of Michigan with a B.S.E. in Nuclear Engineering and Radiological Sciences in the Spring of 2018. In the Fall, he plans to return to his alma mater to pursue Ph.D. studies with a focus on radiation detection and measurement. Michael has research experience in both theoretical mathematics and neutron multiplicity counting. Apart from his academics and love for teaching, Michael also likes to play soccer.

Group: NEN-2 **Mentor**: Jesson Hutchinson

Devin Kimball is from Colorado Springs, CO and graduated from Brigham Young University in Provo, UT in Chemical Engineering in December 2016. He is currently pursuing his PhD in Nuclear Engineering at the University of Tennessee and hopes to ultimately land at LANL working to enhance nuclear nonproliferation efforts and/or medical isotope production. Devin likes to do almost anything that involves competition, loves to hike and camp, and hopes to someday learn to fly airplanes. He won the "Most Likely to Win the Nobel Peace Prize" superlative from his high school graduating class and the "Most Likely to Fall Asleep in Class" superlative from his university chemical engineering graduating class.

Group: AET-2 **Mentor**: Robert Parker

Rachel Mersch is pursuing her Master's Degree in Nuclear Engineering with a concentration in Radiological Engineering at the University of Tennessee, Knoxville. She received her Bachelor of Science in Physics in December 2017 from the University of Tennessee. She is currently doing research on Diamond Semiconductor Detectors. Her research interests include Nuclear Instrumentation, Nuclear Security, and Health Physics. She enjoys traveling and baking, and she has recently begun painting in her free time.

Mentor: Eduardo Padilla, Sandia National Laboratory

Alicia Palmisano is a fourth year graduate student at Michigan State University (MSU). She did her undergraduate work at Gettysburg College and did research with the MoNA Collaboration at MSU. Alicia's graduate thesis experiment is measuring the cross section of the $^{84}Kr(p,\gamma)^{85}Rb$ reaction with the SuN detector in astrophysically relevant energies to help lower nuclear related uncertainties in p-process reaction networks.

Group: ISR-1 **Mentors**: Daniel Coupland, Caleb Roecker

Kim Pestovich is a Chemical Engineering undergraduate student at New Mexico State University minoring in Materials Engineering and Physics. She plans to enroll in a Materials Science & Engineering PhD program upon graduation. Kim began working at Los Alamos National Laboratory through the high school co-op. Most of her work focuses on developing new ceramic scintillators through novel synthesis and characterization. When not in a classroom or lab, Kim is passionate about community service and STEM outreach. She is a board member at Casa de Peregrinos Emergency Food Program in Las Cruces and President of NMSU Society of Women Engineers.

Group: MST-8 **Mentor**: Kenneth McClellan

Rose Pier received her bachelor's degree in chemical engineering from UC San Diego. As an undergraduate, Rose participated in a wide range of different research topics: vaccine development at UCSD, extraction of previous metals from modeled used nuclear fuel at UC Irvine, probing the optical chromatographic sensitivity to small variations in cell membranes at the Naval Research Laboratory (Washington, D.C.), and detection of seawater contaminants at Space & Naval Warfare Systems Center (SSC) Pacific (San Diego, CA). As a graduate student in UC Irvine, she is looking at the separation and detection of radionuclides such as radium-226 from environmental samples.

Group: C-AAC **Mentor**: Rebecca Chamberlin

Annelise Plooster is a dual MA candidate in Nonproliferation and Terrorism Studies at the Middlebury Institute of International Studies and Moscow State Institute of International Relations. Her research interests involve multilateral approaches to strengthening the nonproliferation regime with a focus on lab-to-lab cooperation, specifically between the US and the Russian Federation. She previously served as an appointee in the Obama Administration at two federal agencies. As Special Assistant to the Deputy Secretary at the U.S. Department of Energy she traveled to 17 countries to advance climate and nuclear security agreements. She also supported the completion of the Megatons to Megawatts Program, a 20-year agreement between the U.S. Government and the Russian Federation that relied upon commercial market-based solutions to further the goals of nuclear nonproliferation. In 2009, she committed a year of service with AmeriCorps VISTA. She holds a BA in Political Science and a BA in International Studies from the University of Iowa.

Group: PADWP **Mentor**: Sean McDonald

Aditi Rajadhyaksha originally hails from Boston, MA but grew up mostly in New York, NY. She is an undergraduate student at the University of Michigan studying computer science. Outside of classwork, she spends most of her time doing nuclear detection research on organic scintillator detectors with Professor Sara Pozzi and Dr. Patricia Schuster and working on an engineering student design team that builds fuel-efficient prototype vehicles. She has previously interned at University of Michigan as a Consortium for Verification Technology fellow and at Sandia National Labs in Livermore, CA. This summer she will join the Statistical Sciences group with Dr. Emily Casleton.

Group: CCS-6 **Mentor**: Emily Casleton

Thomas Redpath grew up in Virginia and attended James Madison University in Harrisonburg to study physics. He received a masters from Central Michigan University and is currently working towards a PhD at Michigan State. Thomas works with the Modular Neutron Array (MoNA) collaboration to study the nuclear structure of neutron-unbound nuclei; specifically, his thesis project involves a lifetime measurement of the O-26 ground state resonance.

Group: NEN-2 **Mentor**: Krista Meierbachtol

August Ridenour graduated from Dickinson College in Carlisle, PA in 2014 with a degree in Chemistry and History and is currently a 4th year Chemistry Ph.D. student working with Dr. Christopher Cahill at The George Washington University. August's research has focused on exploring the fundamental structural and spectroscopic properties of f-element containing hybrid materials. He simultaneously participates in efforts at GWU and the Elliot School of International Affairs to teach and explore Nuclear Security Policy by assisting in a class working to introduce the nuclear science through the lens of nuclear policy and current affairs.

Group: C-NR **Mentor**: Bob Rundberg

Joshua Smith is a Nuclear Engineering PhD student at the Scintillation Materials Research Center at the University of Tennessee-Knoxville. He previously completed his B.S. in Nuclear Engineering from Texas A&M University. His current research focuses on synthesis methods of ceramic scintillators for nuclear security applications including developing methods for producing nanoparticles of hygroscopic, non-cubic halides for transparent ceramic synthesis.

Group: NEN-2 **Mentor**: Jesson Hutchinson

Jaclynn Unangst received her BS in Chemistry from The University of Arizona where she studied coumarin and lanthanide sol-gels under the guidance of Professor Douglas Loy. She is currently a PhD candidate at The University of California, Irvine where she is mentored by Professor Mikael Nilsson. Her research involves the aqueous sequestration of actinides, particularly uranium and neptunium, using a novel hybrid solid support material. Her work at Sandia National Lab this summer will focus on creating an optical actinide sensor based upon this novel hybrid material chemistry. She enjoys beach runs, sewing and eating Mexican food when she's not in the lab.

Mentor: Tina Nenoff, Sandia National Laboratory

Daniel Votaw is a PhD student at the National Superconducting Cyclotron Laboratory (NSCL) at Michigan State University, studying the structure of exotic nuclei. He works with the MoNA Collaboration to study nuclei near or beyond the neutron dripline. Daniel grew up in Virginia, near Washington D.C. He holds a BS in physics from James Madison University, and a MS in physics from Michigan State.

Group: P-27 **Mentor**: Aaron Couture

Sophie Weidenbenner has just completed her third year of undergraduate studies at Purdue University where she is majoring in Nuclear Engineering. At Purdue she supports work done by the Applied Intelligent Systems Laboratory on projects funded through the Consortium for Nonproliferation Enabling Capabilities (CNEC). This summer will be her second summer working with the Monte Carlo Methods group at LANL. Upon completion of her undergraduate degree, Sophie plans to pursue a Master's in Nuclear Engineering.

Group: XCP-3 **Mentor**: Jeff Favorite

Austin Wright just graduated with Bachelors degrees in Physics and Computer Science from the University of California, Berkeley. In his undergraduate career, Austin conducted research with Dr. Bethany Goldblum on multiple projects applying new technical approaches towards applications in nuclear security and nonproliferation. Their latest work has been on machine learning analysis techniques using wireless sensor networks for improved proliferation detection. For this work, Austin has won the Network Science & Nuclear Nonproliferation Idea Challenge and has had the opportunity to speak at the Institute for Nuclear Materials Management and the Defense Nuclear Nonproliferation Research and Development University Program Review.

Group: NEN-1 **Mentors**: Karen Miller, Alexis Trahan

Amanda Youmans is from the town of Herndon in northern Virginia. She received her Bachelor's degree at Rensselaer Polytechnic Institute in 2014 in nuclear engineering. Amanda is currently working on her Ph.D. at RPI in nuclear engineering.

Group: NEN-1 **Mentor**: Alexis Trahan

NSSC-LANL Keepin Summer Program:

Staff

Dr. Bethany Goldblum is a member of the research faculty in the Department of Nuclear Engineering at the University of California, Berkeley. She also serves as Director of Education for the Nuclear Science and Security Consortium and Director of the 2014 Public Policy and Nuclear Threats Bootcamp. Goldblum received a PhD in Nuclear Engineering from the University of California, Berkeley in 2007. Her research interests are in the areas of fundamental nuclear physics for nuclear security applications, nuclear-plasma interactions, scintillator characterization, and nuclear energy and weapons policy. Goldblum maintains active collaborations with the United States Department of Energy national laboratories and is an affiliate at Lawrence Berkeley, Lawrence Livermore and Sandia National Laboratory.

Charlotte Carr is the Program Manager of the Nuclear Science and Security Consortium. Charlotte holds a Master's Degree in Public Administration from the Middlebury Institute of International Studies at Monterey. Charlotte oversees program development and implementation, monitoring and evaluation, and reporting for academic programs and research projects focused on providing technical and policy education to the next generation of leading nuclear security experts.

Nina Rosenberg has worked in both technical and leadership roles at NNSA National Laboratories since 1991. She is currently the Program Director of Nuclear Nonproliferation and Security at Los Alamos National Laboratory, where she manages a portfolio that includes primarily work for NNSA's Office of Defense Nuclear Nonproliferation. In 2011, Nina returned to Los Alamos where she was a staff scientist in the Earth and Environmental Sciences Division from 1991 until 1998. In the interim, Nina worked at Lawrence Livermore National Laboratory in a variety of roles including Division Leader and member of the senior management team in Livermore's Physical and Life Sciences Directorate, and Global Security program manager. She is currently the Deputy Chair of the Nonproliferation and Arms Control Technical Division in the Institute for Nuclear Materials Management (INMM). Nina is a geoscientist with experience in subsurface contaminant transport and remediation, water resources, and geologic repositories for nuclear waste. She earned a PhD and M.A. from the University of California, Santa Barbara and a B.A. from Princeton University.

Dr. Rian Bahran is currently an R&D staff member at Los Alamos National Laboratory in the Nuclear Engineering & Nonproliferation Division where he leads R&D/training efforts for nuclear nonproliferation, international safeguards and security. He obtained his PhD in Nuclear Engineering and Science from Rensselaer Polytechnic Institute (RPI) and holds a Dual BS in Nuclear Engineering & Engineering Physics from the same university. At Los Alamos, he is a member of the nuclear incident response team and the critical experiments team which is responsible for the execution of various category I special nuclear material measurement campaigns. He is the Los Alamos POC for the UC Berkeley Nuclear Nonproliferation Research Consortia.

Chloe Verschuren is a Technical Project Manager at Los Alamos National Laboratory in the Safeguards Science and Technology group. As a 2016 graduate of Texas A&M's Bush School of Government and Public Service, Chloe earned a Masters of International Affairs. Her graduate studies focused on nuclear deterrence theory, nonproliferation policy, and transatlantic affairs. Originally working for the National Security and International Studies Office at Los Alamos, Chloe now supports work on university engagement, early career initiatives, and human capital development projects. Outside of work, Chloe enjoys reading Steven King novels, traveling the world, and attending trivia nights.

Meghan McDonald graduated with a Bachelor of Arts in Security and Foreign Policy and minor in French from Virginia Tech in 2018. Meghan interned on Capitol Hill in a Congressional Office for four months, a state Senate office for four months, and has worked at Los Alamos National Laboratory for four summers. Meghan plans to work at LANL for a year as an analyst before pursuing a Master's degree in Public Policy.

Katie Mummah is a second-year PhD student in nuclear engineering at the University of Wisconsin with a nuclear engineering bachelors from the University of Illinois. Her work focuses on nuclear fuel cycle simulations for nonproliferation applications including modeling the Joint Comprehensive Plan of Action (colloquially the Iran Nuclear Deal). Katie was part of the Keepin Nonproliferation Summer School last year, which helped her develop a passion for the field of nonproliferation. Outside of work, Katie is involved in the American Nuclear Society and enjoys camping, hiking, and playing volleyball.

Philippa Chadwick attends Bard College in upstate New York studying Global Public Health and Human Rights. She has taken a wide range of classes in her first year including a course on Nuclear Proliferation and International Relations classes. At Los Alamos National Laboratory she is part of the Critical Experiments Team at NEN-2. Her interests also include Global Security and Nuclear Nonproliferation and she hopes to spend more time at the Lab researching nuclear progress, safeguards, IAEA inspections, and learning more from the data gained by critical experiments. In her spare time, Philippa enjoys traveling, art, and spending time outdoors.