



33RD ANNUAL KEARNS SUMMER RESEARCH SYMPOSIUM

JULY 30-31, 2025

2025

Program Timetables

Wednesday, July 30

10:30 am:	Arrival & Sign-in	<i>May Room, Wilson Commons</i>
Welcome & Opening		
10:45 am:	Opening Remarks Dr. Antonio Williams <i>Interim Director of the Kearns Center and Director for Graduate Diversity</i>	<i>May Room, Wilson Commons</i>
10:55 am:	Keynote Dr. Elaine Sia <i>Senior Vice Provost for Academic Excellence</i> Marissa Hendrickson <i>'23 Alumni</i>	<i>May Room, Wilson Commons</i>
Panel Presentations		
11:30 am:	Featured Panel Presenters Sejad Salah Al-Rubayie (<i>McNair</i>) Carlos Alejandro Alvarado (<i>Photonics</i>) Jack Chen (<i>McNair</i>) Sara Conti (<i>Physics & Astronomy</i>) Autumn Landwehr (<i>Photonics</i>) David Rios (<i>Physics & Astronomy</i>) Carly Zubrzycki (<i>McNair</i>)	<i>May Room, Wilson Commons</i>
12:15 pm:	Lunch	
Poster Presentations		
1:45 pm:	Poster Presentations from undergraduate summer research Scholars in: Ronald E. McNair Program, NSF REU in Photonics, NSF REU in Physics & Astronomy	<i>Hirst Lounge, Wilson Commons</i>
3:15 pm:	Day closing	<i>May Room, Wilson Commons</i>

Thursday, July 31

Oral Presentation Sessions will be held simultaneously at various campus locations by group for Day 2 as such: Physics & Astronomy - Bausch & Lomb Hall 106, Photonics - Wegmans Hall 1400, McNair - Hawkins-Carlson. Timetable below displays session order and times for Ronald E. McNair Program Scholars.

9:30 am:	Arrival & Sign-in	Hawkins-Carlson, Rush Rhees
9:55 am:	Opening Remarks George McCormick	Hawkins-Carlson, Rush Rhees
Oral Presentation Session 1		
10:00 am:	10-Minute Oral Presentations Kathalina Ramirez Sejad Salah Al-Rubayie Benzir Raida Kelsey Faranda Guy Emrich Faryal Shabir Jonathan Pulido Eyüp Akin Togay Hifsa Qayyoom Kayla Koo Jack Chen	Hawkins-Carlson, Rush Rhees
12:00 pm:	Lunch	Welles-Brown, Rush Rhees
Oral Presentation Session 2		
1:00 pm:	10-Minute Oral Presentations Carly Zubrzycki Naima A. Petersen Alicia Markovich Liany Fortunato Bran Maya Benavidez Ulizes Atlixqueno Yahel Grullon Denise Ivey	Hawkins-Carlson, Rush Rhees
Closing Reception		
2:45 pm:	Closing Reception	Welles-Brown, Rush Rhees

Poster Presentations

- 1. Overhead of Runtime checking for Indirect Array Out-of-Bounds Accesses**
Sejad Salah Al-Rubayie, Mentors: Dr. Pai and Dr. Guo (*McNair*)
- 2. Modeling Spiral Interocular Lenses Using An Adaptive Optics System for Myopia Control**
Carlos Alejandro Alvarado, Mentor: Dr. Susana Marcos (*Photonics*)
- 3. Introducing XRDRReader for Automated Extraction and Library Generation of X-Ray Diffraction Data from Scientific Literature**
Ulizes Atlixqueno, Mentor: Dr. Niaz Abdolrahim (*McNair*)
- 4. In vitro localization of a targeted photosensitizer for treating head and neck cancer**
Maya Benavidez, Mentor: Dr. Timothy M. Baran (*McNair*)
- 5. Are Counter Rotations Tied to Environments and AGN?**
Emilio Benitez Aguinaga, Mentor: Dr. Kelly A. Douglass (*Physics & Astronomy*)
- 6. Structure of Two-Photon Entanglement at the Focus of a High Numerical-Aperture Lens**
Thomas Bouchard, Mentor: Dr. Robert Boyd (*Photonics*)
- 7. Configuration of QICK(Quantum Instrumentation Control Kit) for Control of Semiconductor Spin Qubits**
Edward Brown, Mentor: Dr. John Nichol (*Physics & Astronomy*)
- 8. Exploring Harsh Parenting and Accuracy of Social Judgement Through the Hidden Talents Framework**
Jack Chen, Mentor: Dr. Patrick T. Davies (*McNair*)
- 9. Modeling Sensitivity to Supernova Signals in an Upgrade of IceCube**
Sara Conti, Mentor: Dr. Segev BenZvi (*Physics & Astronomy*)
- 10. Diagnosing Resonator Reflection Measurements with Electromagnetic Simulation**
Donovan Dyk, Mentor: Dr. Machiel Blok (*Physics & Astronomy*)
- 11. Indians, Ghosts, and Maps: Making Borders and Performing Disappearance**
Guy Emrich, Mentor: Dr. Philip V. McHarris (*McNair*)
- 12. Tracing Inequality: School Catchment Areas and Historical Redlining Maps in Rochester**
Kelsey Faranda, Mentor: Dr. Kristin Doughty (*McNair*)

- 13. SKI: Skin Tone Identification**
Liany Fortunato Bran, Mentor: Dr. Isobel Heck (*McNair*)
- 14. Fiber-to-Chip Fusion**
Gadg Glover, Mentor: Dr. Jaime Cardenas (*Photonics*)
- 15. Stabilizing Laser Cavity Length Against Unwanted Vibrations**
Matthew Goh, Mentor: Dr. Nicholas Bigelow (*Physics & Astronomy*)
- 16. Peak Power Characterization of Ultrashort Pulse Optical Sources**
Yahel Grullon, Mentor: Dr. William Renninger (*McNair*)
- 17. Event-Based High Precision Eye-Tracking**
Nathan Hart, Mentor: Dr. Jannick Rolland (*Photonics*)
- 18. Exploring Effects of Hyperinsulinemia on Insulin Signaling in PCOS Mice**
Denise Ivey, Mentor: Dr. Olga Astapova (*McNair*)
- 19. Modeling Heat Conduction and Measuring Temperature at the Nanoscale with Upconverting Nanoparticles**
Ashley Johnson, Mentor: Dr. Andrea Pickel (*Photonics*)
- 20. Do Prosecutors Respond to Fiscal Pressures from Local Governments?**
Kayla Koo, Mentor: Dr. Sidak Yntiso (*McNair*)
- 21. Measuring the spatial degree of unpolarization**
Autumn Landwehr, Mentor: Dr. Nick Vamivakas (*Photonics*)
- 22. Designing an Optomechanical Device for Quantum Transduction**
Jessie Ledesma, Mentor: Dr. William Renninger (*Photonics*)
- 23. Cross-Language Activation in DGS-German Bilinguals**
Alicia Markovich, Mentors: Dr. Martin Yang, Dr. Agnes Villwock (*McNair*)
- 24. Numerically Studying and Tuning Resistivity Saturation in Metals**
Joseph Murphy, Mentor: Dr. Chaitanya Murthy (*Physics & Astronomy*)
- 25. Low-Energy Cooling: Investigating the Efficiency of Indirect Evaporative Systems**
Taytum Nelson, Mentor: Dr. Chunlei Guo (*Physics & Astronomy*)
- 26. Pawprints on Love: The Bonds Connecting Couples and Their Pets**
Naima A. Petersen, Mentor: Dr. Ronald Rogge (*McNair*)

- 27. Cross-Coupling in Suspended Silicon Nitride Waveguides**
Kellen Pollock, Mentor: Dr. Jaime Cardenas (*Physics & Astronomy*)
- 28. Exploring Fluence in Laser Ablation**
Taylor Porter, Mentor: Dr. Tanya Kosc (*Photonics*)
- 29. Impact of Redox-Induced Coordination Number Change on the Redox Properties of Copper Complexes**
Jonathan Pulido, Mentor: Dr. Agnes E. Thorarinsdottir (*McNair*)
- 30. Qudit T1 Decay Dynamics**
Hifsa Qayyoom, Mentor: Dr. Machiel Blok (*McNair*)
- 31. Finding Optimal Interatomic Potential to Predict Debye Temperature**
Benzir Raida, Mentor: Dr. Niaz Abdolrahim (*McNair*)
- 32. Development of an Ultrasound Imaging System to Estimate Mechanical Properties of Porcine Extensor Tendon Ex Vivo**
Kathalina Ramirez, Mentor: Dr. Diane Dalecki (*McNair*)
- 33. Measuring Dynamical Properties of Bipolar Outflows in the Low-Mass Protostellar System IC348MMS Using the NOEMA Interferometer**
David Rios, Mentor: Dr. Dominique Segura-Cox (*Physics & Astronomy*)
- 34. Osteoporosis Pre-Screening using Raman Spectroscopy**
Emma Schenker, Mentor: Dr. Andrew Berger (*Photonics*)
- 35. A Multi-Readout Photonic Sensor for Rapid Diagnosis of Von Willebrand Deficiency**
Robert L. Scott, Mentor: Dr. Benjamin L. Miller (*Photonics*)
- 36. Fuzzy Matching: Linking Disparate Name Variants for Social Network Analysis in Kenya**
Faryal Shabir, Mentor: Dr. Travis Baseler (*McNair*)
- 37. Simulating Axion-Like Particle Detection from Core-Collapse Supernovae in the IceCube Neutrino Observatory**
Eyüp Akin Togay, Mentor: Dr. Segev BenZvi (*McNair*)
- 38. Plan Quality Comparison for Online Adaptive Radiation Therapy of Prostate Cancer Patients**
Gioia Zincone, Mentor: Dr. Sean Tanny (*Physics & Astronomy*)
- 39. The Art of Protest**
Carly Zubrzycki, Mentor: Dr. Nancy Bernardo (*McNair*)

Notes

Acknowledgements

The David T. Kearns Center for Leadership and Student Success would like to thank the faculty, post-doctoral researchers, graduate students, staff, deans, and directors of the various departments that mentored and supported these 39 undergraduate Scholars throughout the summer of 2025.

Thank you to our generous sponsors: United States Department of Education, National Science Foundation, Office of Undergraduate Research, the Office of the Dean, and the Office of the President.

Thank you and congratulations, 2025 Scholars!



KEARNS
SUMMER UNDERGRADUATE
RESEARCH EXPERIENCE
*Transforming lives through
educational opportunity*

TRIO
RONALD E. MCNAIR
POST-BACCALAUREATE
ACHIEVEMENT PROGRAM

For decades, the Kearns Center has supported and celebrated the accomplishments of over 720 Scholars with our sponsors. This year, 39 Scholars participated from the following undergraduate research programs:

Ronald E. McNair Post-Baccalaureate Achievement Program
(*McNair*)

NSF REU in Physics, Astrophysics and Optics, Department of Physics
& Astronomy (*Physics & Astronomy*)

NSF REU in Nanophotonics, Quantum Photonics, and
Vision/Biomedical Optics, The Institute of Optics (*Photonics*)