Kearns Summer Research Symposium

July 28th, 2023
Feldman Ballroom

The David T. Kearns Center for Leadership and Diversity at the University of Rochester strives to expand the educational pipeline through the doctoral degree for low-income, first-generation college, and underrepresented minority students.

Transforming lives through educational opportunity
Schedule Overview & Sessions

9:00 am: **Welcome & Opening**
Dr. Beth Olivares, Dean for Diversity, Executive Director, Kearns Center

9:20 am: **Panel Discussion A**
Moderator: Demetrious Dowdell, Ph.D. Student, Institute of Optics, University of Rochester
Presenters: Sara Moore (Physics & Astronomy)
          Henry Howard (McNair)
          Jordynn Foster (TMCF)

10:00 am: Break

10:10 am: **Oral Presentation Block A**

11:15 am: Break

11:30 pm: **Poster Presentation Block A**

12:30 pm: Lunch

1:15 pm: **Panel Discussion B**
Moderator: Micah Williams, President of GSOC, Ph.D. Student, Department of English, University of Rochester
Presenters: Kelly Andersen & Priscilla Omotara (ECE)
          Lili Seoror (MMM)
          Sarah Boyer (Chemistry)

1:45 pm: Break

1:55 pm: **Oral Presentation Block B**

3:10 pm: Break

3:20 pm: **Poster Presentation Block B**

4:25 pm: **Closing**
Melissa Raucci, Assistant Director, College Programs, Kearns Center
Oral Presentation Block A
10:10 - 11:15 am

Douglass 401:
Kendal Jordan (McNair)
Zakilya Brown (McNair)
Shahzoda Nasimjonova (McNair)
Lalita Dahal (McNair)
Mystie Parker (McNair)
Jennasea Licata (McNair)
Taylor Franks (TMCF)

Douglass 403:
Ashley Bao & Kaleb Newman (MMM)
Sophia Caruana & Shaojia (Emily) Lu (MMM)
Sophia Cao (MMM)
A’nya Carr & Destiny Medaris (ECE)
Alejandro Chavez-Mayoral (ECE)
Avery Fuller (ECE)
Trinity King (ECE)

Humanities Conference Room D:
Maria Ahmed (Chemistry)
Kate Custer (Chemistry)
Georgia Hollingsworth (Chemistry)
Nicolas Kaltenhauser (Chemistry)
Grace Barner (Physics & Astronomy)
Layton Borst (Physics & Astronomy)
Delaney Cummins (Physics & Astronomy)
Caleb Jennings (Physics & Astronomy)
David Kong (Physics & Astronomy)

Oral Presentation Block B
1:55 - 3:10 pm

Douglass 401:
Aaliyah Dorsey (McNair)
Deziere Garrick (McNair & LEAF)
Dariel Guerra (McNair)
Janiah Piper (McNair)
Winifred Dorlean (McNair)
Manuel Gonzalez (McNair)
Rebecca Fraser (TMCF)
Toyin Harris (TMCF)

Douglass 403:
Jesus Diaz (MMM)
Andrew Liu & Julia Hootman (MMM)
Sangeetha Ramanuj (MMM)
Manogna Jonnalagadda (ECE)
Olivia Lucia (ECE)
Maya Petterson (ECE)
Jonathan Vazquez (ECE)

Humanities Conference Room D:
Christopher Leiter (Chemistry)
Destinee McGlone (Chemistry)
Julia Shoemaker (Chemistry)
Madeline Wahl (Chemistry)
Caz Wood (Chemistry)
Nathan Mangus (Physics & Astronomy)
Ellie McGee (Physics & Astronomy)
Maddy Ramsey (Physics & Astronomy)
Nathaniel Santiago (Physics & Astronomy)
Degraj Suberi (Physics & Astronomy)
Josiah Tusler (Physics & Astronomy)
(1) Using Machine Learning to Detect Large Galaxies
Sara Moore, Mentor: Segev BenZvi

(2) Measuring Spin Current in Heisenberg XXZ Model
Henry Howard, Mentor: Gabriel Landi

(3) Super Resolution of Optical Imaging
Jordynn Foster, Mentor: Nick Vamivakas

(4) Depressive Symptoms Affect on Learning and Memory in a Rewarding Environment
Kendal Jordan, Mentor: Benjamin Suarez-Jimenez

(5) Visual and Tactile Sensory Processing in Individuals with Autism and Comorbid Attention-Deficit/Hyperactivity Disorder
Zakilya Brown, Mentor: Emily Isenstein

(6) Neurophysiology of Perceptual Closure Abilities in Neurotypical Children and Adults
Shahzoda Nasimjonova, Mentor: John J. Fox

(7) Mapping the Microscopic Localization of Splenic Diffuse Red Pulp Lymphoma
Lalita Dahal, Mentor: Richard Burack

(8) Exploring Age Related Coding Regions for Mouse, Human, and Bats
Mystie Parker, Mentor: Vera Gorbunova

(9) Generation of Nanobody Library using Yeast Surface Display Methods
Jennasea Licata, Mentor: John Lueck

(10) Satellite DNA (satDNA) Knockdown and Its Affect on Male Drosophila Melanogaster Fertility
Taylor Franks, Mentor: Amanda Larracuente

(11) Real-Time ASL Communication Technologies to Mitigate Language Deprivation
Ashley Bao & Kaleb Newman, Mentor: Zhen Bai

(12) Continual Learning in Deep Neural Networks of Audio-Visual Data
Sophia Caruana & Shaojia (Emily) Lu, Mentor: Christopher Kanan

(13) Analyzing Videos of 3D Printing from a Depth Camera
Sophia Cao, Mentor: Sreepathi Pai

(14) Pain Perception in Mice: A Machine Learning Approach
A’nya Carr & Destiny Medaris, Mentor: Jiebo Luo

(15) Machine Learning Analysis of Olfactory-Guided Food Seeking Behavior
Alejandro Chavez-Mayoral, Mentor: Julian Meeks
(17) Validation of Microglial Priming via IBA1 Expression in HIVNanoLucCHME5 Cell Line
Trinity King, Mentor: Stephen Dewhurst

(18) Incorporation of Methionine Sulfide During Translation
Maria Ahmed, Mentor: Sina Ghaemmaghami

(19) Quantifying Oxygenated Functional Groups on Hydrophilic Carbon Fiber Paper for Sustainable Technologies
Kate Custer, Mentor: Astrid Müller

(20) Biomolecular Detection Based on Brewster’s Angle Straddle Interferometry
Georgia Hollingsworth, Mentor: Lewis Rothberg

(21) Attempted synthesis of allylic aryl amines via a palladium-catalyzed reaction
Nicolas Kaltenhauser, Mentor: Shauna Paradine

(22) Defining Galaxy Morphology Using Machine Learning
Grace Barner, Mentor: Kelly Douglass

(23) Movement of Vortices in a Bose-Einstein Condensate
Layton Borst, Mentor: Nicholas Bigelow

(24) Searching for Strong Gravitational Lenses in DESI Spectra
Delaney Cummins, Mentor: Segev BenZvi

(25) Construction of an Improved Magneto-Optical Trap
Caleb Jennings, Mentor: Nicholas Bigelow

(26) Simulating Particle Transport in ICF Reactions
David Kong, Mentor: Varchas Gopalaswamy

(27) Optimizing Coupling Efficiency for Soliton Generation
Emily Deveyra (STEM Scholar), Mentor: William Reninger

(28) Fabry-Perot Cavity Optimization
John Caruso (CCI), Mentor: Mitesh Amin

(29) Utilizing NPoM Cavities to Create Strong Coupling
Cheyenne Valles (CCI), Mentor: Nick Vamivakas

(30) Synthesis of CoN5H₂ Catalyst for Energy Conversion Reactions
İşıl Ayaz (iScholar), Mentor: Kara Bren

(31) Cavity QED Hamiltonian for Arbitrary Coupling Strength
John Alejandro Montilla Ortega (iScholar), Mentor: Mike Taylor

(32) Raman Spectroscopy of PTCDA Sensitizer
Sneha Samanta, Mentor: David McCamant
(1) Investigating the Stiffness in the Brains of Mice with Batten Disease using Shear Wave Elastography
Kelly Andersen & Priscilla Omotara, Mentor: Marvin Doyley

(2) Modeling Brain Responses During Naturalistic Music Performance
Lili Seoror, Mentor: Elise Piazza

(3) Synthesis and Characterization of Poly N-Isopropylacrylamide-co-Acrylic Acid for Biosensing Applications
Sarah Boyer, Mentor: Benjamin Miller

(4) Positive Functioning in African American Families: Maternal and Paternal Romantic Attachment as Moderators of Associations between Local Educational Opportunity and Positive Interparental Conflict
Aaliyah Dorsey, Mentor: Melissa Sturge-Apple

(5) Black Feminist Kinship in the City of Rochester
Deziere Garrick, Mentor: Katherine Mariner

(6) Mediated Memory, United States Propaganda, and Cuban State Run Media in an Analysis of the US Embargo on Cuba
Dariel Guerra, Mentor: Molly Ball

(7) Media's Black Representation
Janiah Piper, Mentors: Joel Burges & Tanya Bakhmetyeva

(8) Synthesis of NHC Ligands for Amide Bond Activation
Winifred Dorlean, Mentor: Rose C. Kennedy

(9) Understanding MOT Lockbox Circuitry
Manuel Gonzalez, Mentor: Nicholas Bigelow

(10) Nanoparticle Thin Film Fabrication and Characterization
Rebecca Fraser, Mentor: Todd Krauss

(11) BeeTrap: Neurturing AI Literacy thorough Analysis-Based Learning and Embodied Interaction for Young Learners
Toyin Harris, Mentor: Zhen Bai

(12) Evaluating Structure from Motion for 3D Printing Quality Control
Jesus Diaz, Mentor: Sreepathi Pai

(13) Public Perceptions of Synthetic Cooling Agents in E-Cigarettes on Twitter
Andrew Liu & Julia Hootman, Mentor: Dongmei Li

(14) Using Natural Language Processing to Interpret Music-Evoked Autobiographical Memories
Sangeetha Ramanuj, Mentor: Elise Piazza

(15) Quantification of the changes in vascularization during bone healing using Spatial Frequency Domain Imaging
Manogna Jonnalagadda, Mentor: Regine Choe
(16) Optimization of STED microscopy to measure the subcellular localization of KRIT1
Olivia Lucia, Mentor: Angela Glading

(17) Robot Assisted Ultrasound Imaging
Maya Petterson, Mentor: Thomas Howard

(18) Community Detection Algorithm Comparison in Networks
Jonathan Vazquez, Mentor: Gonzalo Mateos

(19) Scale of Synthesis of Four Monolayer CdSe Nanoplatelets
Christopher Leiter, Mentor: Todd Krauss

(20) Peptide Self-Assembly Scaffolds for Multivalent Display
Destinee McGlone, Mentor: Bradley Nilsson

(21) Synthesis and Catalytic Activity of NHC-Pyridine Nickel Complex
Julia Shoemaker, Mentor: Rose C. Kennedy

(22) Investigating the ability for ligand-less spinel metal oxide nanocrystals containing cobalt to degrade model pollutants through photocatalysis
Madeline Wahl, Mentor: Kathryn Knowles

(23) Catalytic Dehydration of Alcohols by Zinc FOX Complexes
Caz Wood, Mentor: William Jones

(24) Simulating the Rayleigh-Taylor Instability
Nathan Mangus, Mentor: Petros Tzeferacos

(25) Modeling Ion Electron Heat Exchange through the Coulomb Logarithm
Ellie McGee, Mentor: Petros Tzeferacos

(26) IQ Mixer Correction for Superconducting Qubits
Maddy Ramsey, Mentor: Machiel Blok

(27) Tuning Neutrino Multi-Nucleon Knockout Models
Nathaniel Santiago, Mentor: Kevin McFarland

(28) Reconstructing the Microstructure of Neutrino Beams at MINERvA
Degraj Suberi, Mentor: Chris Marshall

(29) Solar Parameters and Their Effect in the Deep Underground Neutrino Experiment (DUNE)
Josiah Tusler, Mentor: Chris Marshall

(30) Designing Hydrogen-Bonding Motifs to Program Hierarchical Self-Assembly
Basil Aliyas (iScholar), Mentor: Benjamin Partridge

(31) Copper-catalyzed aminooxygenation of heteroaryl alkenes
Neively Tlapale Lara (iScholar), Mentor: Shauna Paradine

(32) Including Electron Correlation Effects in Laser Induced Transport
Jhoan Alexis Fernandez Sanchez (iScholar), Mentor: Ignacio Gustin
Presenters are members of the following undergraduate research programs:

- Centers for Chemical Innovation (CCI)
- iScholars: Summer Research Program for International Undergraduate Students
- Local Ethnography and Archiving Fellowship (LEAF)
- NSF REU Chemistry Research for Medicine and Energy
- NSF REU Computational Methods for Understanding Music, Media, and Minds (MMM)
- NSF REU Imaging in Medicine and Biology for Underrepresented Minorities (ECE)
- NSF REU Physics & Astronomy
- Ronald E. McNair Post-Baccalaureate Achievement Program
- STEM Scholars
- Thurgood Marshall College Fund (TMCF)

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