2022 Research and Creative Activities Conference

November 5 | 1:00 PM | Buchanan Hall
Welcome

The CCS Research and Creative Activities Conference (RACA-CON) was established to promote collaboration between disciplines based on the understanding that no research or creative activity is complete until it is shared. RACA-CON provides an opportunity for students to practice communicating their work to an interdisciplinary audience of their peers and the CCS community. Presenters include CCS Summer Undergraduate Research Fellowship recipients, who have been supported by a variety of funding sources, including multiple endowed funds and The Create Fund at the College.

The conference features oral presentations and posters from students across CCS majors. Whether it be an original piece of art, literary work, music score, or a scientific research project, each RACA-CON presentation is the culmination of many hours of dedicated work by the students with the guidance of their faculty mentors.

Schedule of Events

12:30 PM  
**Sign-in**
Buchanan Courtyard

1:00 PM  
**Welcome Address**
Buchanan Room 1910

1:15 PM  
**Student Talks**
Buchanan Rooms 1910, 1920, 1930, 1940

3:00 PM  
**Poster Session**
Buchanan Courtyard

4:00 PM  
**Conference Close**
Student Talks by Room

Talks will occur simultaneously in four rooms. Each room features speakers from a variety of majors. No matter which room you choose, you will get to experience and celebrate creative works from a wide range of disciplines. Enjoy!

Room 1910

Chloe Jenniches ’23 (Biology)
Development of methods to increase the research capacity for investigating cycling of biotoxins in promising native aquaculture species
Advisor: Carrie Culver

Xinyuan Lin ’23 (Physics)
CCS Dean’s Fellow
Weighing our Milky Way Using Bayesian Optimization for Likelihood-free Inference with Optimal Transport
Advisor: Nathaniel Craig

Min Choi ’23 (Writing & Literature)
CCS Dean’s Fellow
Baek Da-som (and Other Forgotten Names)
Advisor: Rebbecca Brown

Lanxuan Wang ’24 (Physics)
CCS Roig Fellow
Improved Dynamical Masses for HD130948 and Its Brown Dwarf Companions
Advisor: Timothy Brandt

Abhinav (Montu) Ganesh ‘23 (Physics)
Astrophotonics: Simulation of Astronomical Spectroscopy with Photonic Spectrographs
Advisor: Dimitri Mawet (California Institute of Technology)

Michael Kuhn ’23 (Computing & Mathematics) and Zachary Miller ’23 (Computing & Mathematics)
CCS Dean’s Fellows
k-independence coverings in the class of C4-free graphs
Advisor: Daniel Lokshtanov

Sophia Wolczko ’23 (Physics)
Polaron Self Energy using DFT and MBPT
Advisor: Vojtech Vlcek
Student Talks by Room (cont.)

Room 1920

Owen Jenkins ‘23 (Art)
CCS Dean’s Fellow
Earth Heart
Advisor: Dan Connally

Samuel David Alcott ‘23 (Physics)
MilliQan: a search for millicharged particles
Advisor: David Stuart

Myles O’Leary ‘24 (Physics)
Simplifying Physical Systems with Noise
Advisor: Paul Atzberger

Alex Christopher Lim ‘25 (Computing)
Rivers and Flow Traversal
Advisor: Santiago V. Lombeyda (California Institute of Technology)

Room 1930

Marianne Arriola ‘23 (Computing)
Geometry-Aware Point Cloud Learning for Robust and Efficient 3D Vision
Advisor: Justin Solomon (MIT)

Jack Grossman ‘23 (Physics)
Lucky Imaging with ORKID
Advisor: Maxwell Millar-Blanchaer

Qing Yao ‘24 (Math)
CCS Dean’s Fellow
Bandlimited Sparse Graph Signal Recovery via Dynamical Sampling
Advisor: Sui Tang

Isabella Catanzaro ‘23 (Physics)
Improved Manufacturing of Van Der Waals Heterostructures at High Magnification
Advisor: Andrea Young

Marina Stoilova ‘23 (Biology)
CCS Norman F. Sprague III Fellow
Light Sensation and Regeneration in Hydra vulgaris
Advisor: Todd Oakley

Johnny Nienstedt ‘24 (Physics)
Interlock System for Strontium BEC Machine
Advisor: David Weld

Xin Sheng ‘23 (Physics)
Constrain IGM enrichment and metallicity with the Lyman-alpha and C IV forest correlation function
Advisor: Joseph Hennawi
Room 1940

Morgan Ohana ’24 (Physics)
Simulating Superhumps in Accretion Disks in Compact Binary Systems
Advisor: Omer Blaes

Joowon Jung ’24 (Physics)
A Step Towards Solving the Neutrino Mass Puzzle Through the Detection of Muon to Positron Conversion
Advisor: Xiao Luo

Martina Chen ’24 (Music Composition)
CCS Dean’s Fellow
Creating a Rhythm Game
Advisor: Andrew Watts

Connor Lindquist ’24 (Math)
Towards A Structure Theorem for Subgroups of The Symmetric Group
Advisor: Xiaolei Zhao

Jai Uparkar ’24 (Computing)
Regression with Race & Categorical Predictors
Advisor: Daniel Kowal (Rice University)

Simon Mitchell ’23 (Physics)
CCS Fang Fellow
Automated Detection of 2D Materials
Advisor: Chenhao Jin
Student Posters (Alphabetically)

Samuel David Alcott ‘23 (Physics)
MilliQan: a search for millicharged particles
Advisor: David Stuart

Marianne Arriola ‘23 (Computing)
Geometry-Aware Point Cloud Learning for Robust and Efficient 3D Vision
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Min Choi ‘23 (Writing & Literature)
CCS Dean’s Fellow
Baek Da-som (and Other Forgotten Names)
Advisor: Rebbecca Brown

Aurora de Tagyos ‘24 (Chemistry & Biochemistry)
Encapsulation of Bacteria in Polyvinyl Alcohol (PVA) Hydrogels for Drug Delivery Applications
Advisor: Dotti Pak

Benjamin Faktor ‘25 (Math)
Linear maps preserving the Lorentz spectrum of 3x3 matrices
Advisor: Maribel Bueno

Abhinav (Montu) Ganesh ‘23 (Physics)
Astrophotonics: Simulation of Astronomical Spectroscopy with Photonic Spectrographs
Advisor: Dimitri Mawet (California Institute of Technology)

Jack Grossman ‘23 (Physics)
Lucky Imaging with ORKID
Advisor: Maxwell Millar-Blanchaer

Ixchel Hernandez ‘23 (Writing & Literature)
CCS Max Schott Fellow
Tracing Joy Where It Wanders
Advisor: Rick Benjamin

Aaron Huang ‘25 (Physics)
Interpretation of far-SOL collector probes during the SAS-VW campaign on DIII-D
Advisor: Shawn Zamperini (General Atomics in San Diego)

Owen Jenkins ‘23 (Art)
CCS Dean’s Fellow
Earth Heart
Advisor: Dan Connally
Chloe Jenniches ’23 (Biology)
Development of methods to increase the research capacity for investigating cycling of biotoxins in promising native aquaculture species
Advisor: Carrie Culver

Manu Kondapaneni ’23 (Computing)
CCS Dean’s Fellow
Sublinear Zero Knowledge for Arithmetic Circuit SAT
Advisor: Prabhanjan Ananth

Michael Kuhn ’23 (Mathematics)
CCS Dean’s Fellow
k-independence coverings in the class of C4-free graphs
Advisor: Daniel Lokshtanov

Xuanwei Liang ’24 (Physics)
Classification of Small HI Cloudlets in the High Velocity Cloud - AC Complex
Advisor: Tengiz Bibilashvili

Alex Christopher Lim ’25 (Computing)
Rivers and Flow Traversal
Advisor: Santiago V. Lombeyda (California Institute of Technology)

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Weighing our Milky Way Using Bayesian Optimization for Likelihood-free Inference with Optimal Transport
Advisor: Nathaniel Craig

Connor Lindquist ’24 (Math)
Towards A Structure Theorem for Subgroups of The Symmetric Group
Advisor: Xiaolei Zhao

Kento Wakamatsu Logan ’23 (Biology)
CCS Proctor Fellow
Altering Allorecognition Patterns in B. schlosseri Chimeras
Advisor: Anthony DeTomaso

Solemn Matuska ’23 (Chemistry & Biochemistry)
CCS Dean’s Fellow
Structural Analysis and Comparison of Allorecognition Protein fuhc sec in B. Schlosseri and B. Diegensis
Advisor: Anthony de Tomaso

Juan Antonio Medina ’23 (Biology)
CCS Tiffney Fellow
Targeting gene expression in an oscillating neuron in Ciona, our invertebrate cousin
Advisor: William Smith

Zachary Miller ’23 (Computing)
CCS Dean’s Fellow
k-Independence Coverings in the Class of C4-Free Graphs
Advisor: Daniel Lokshtanov

Simon Mitchell ’23 (Physics)
CCS Fang Fellow
Automated Detection of 2D Materials
Advisor: Chenhao Jin
Leah Moment ‘23 (Art)  
CCS Dr. Rajendra Singh Fellow  
In Search of Better  
Advisor: Iman Djouini

Milo Moses ‘26 (Mathematics)  
p-adic duality  
Advisor: Karel Casteels

Myles O’Leary ‘23 (Physics)  
Simplifying Physical Systems with Noise  
Advisor: Paul Atzberger

Morgan Ohana ‘24 (Physics)  
Simulating Superhumps in Accretion Disks in Compact Binary Systems  
Advisor: Omer Blaes

Rio Ondo ‘23 (Physics)  
Engineering subcompartment structure in a two-phase DNA condensate  
Advisor: Omar Saleh

Julia Ong ‘24 (Chemistry & Biochemistry)  
Wood polymer electrolyte membranes for zinc batteries  
Advisor: Aleksandar Matic (Chalmers University of Technology)

Maya Salem ‘24 (Writing & Literature)  
CCS Dean’s Fellow  
Before He Was Baba // A Personal History of a Lebanese Immigrant Father  
Advisor: Wendy Eley Jackson

Gahl Shemy ‘23 (Mathematics)  
Modular Principal Series Representation of GL2 Over Finite Rings  
Advisor: Charlotte Chan (University of Michigan)

Xin Sheng ‘23 (Physics)  
Constrain IGM enrichment and metallicity with the Lyman-alpha and C IV forest correlation function  
Advisor: Joseph Hennawi

Lila V. Singh ‘23 (Writing & Literature)  
Spectrum Literary Journal  
Advisor: Rebbecca Brown

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CCS Norman F. Sprague III Fellow  
Light Sensation and Regeneration in Hydra vulgaris  
Advisor: Todd Oakley

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Improved Dynamical Masses for HD130948 and Its Brown Dwarf Companions  
Advisor: Dr. Timothy Brandt

Tianyi Wang ‘24 (Mathematics)  
CCS Kelly Fellow  
Generalized Eden Model on Graphs and Fundamental Domains  
Advisor: Fedor Manin
Sophia Wolczko ‘23 (Physics)
Polaron Self Energy using DFT and MBPT
Advisor: Vojtech Vlcek

Qing Yao ‘24 (Mathematics)
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Bandlimited Sparse Graph Signal Recovery via Dynamical Sampling
Advisor: Sui Tang

Thea Zalunardo ‘23 (Chemistry & Biochemistry)
CCS Fang Fellow
Secondary Metabolite Discovery From Anaerobic Gut Microbes
Advisor: Michelle O’Malley
Follow CCS on Social Media!

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UCSB College of Creative Studies
Empower CCS students to dream big!

Celebrate over three decades of summer undergraduate research fellowships (SURF) at CCS! Fellowships enable students to spend a summer immersed in full-time research in established labs and creative projects at UC Santa Barbara. We are grateful to our philanthropic community for providing the critical means for students to immerse themselves in new experiences, including Summer Undergraduate Research Fellowships.

650+ CCS students since 1985 have been awarded summer fellowships with mostly 100% donor funds! Help us award 30 student fellowships in summer 2023 by making a gift today.

Give Today at [ccs.ucsb.edu/give](ccs.ucsb.edu/give)

For more information: Venilde Jeronimo | [venilde@ucsb.edu](mailto:venilde@ucsb.edu)