2022 Research and Creative Activities Conference November 5 | 1:00 PM | Buchanan Hall

CA-COND





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** <u>Buchanan Rooms 1910, 19</u>20, 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 (Phys-

ics) MilliQan: a search for millicharged particles Advisor: David Stuart

Alex Christopher Lim '25 (Computing)

Rivers and Flow Traversal Advisor: Santiago V. Lombeyda (California Institute of Technology)

Myles O'Leary '24 (Physics)

Simplifying Physical Systems with Noise Advisor: Paul Atzberger

Kento Logan '23 (Biology)

CCS Proctor Fellow Altering Allorecognition Patterns in *B. schlosseri* Chimeras Advisor: Anthony DeTomaso

Johnny Nienstedt '24 (Physics)

Interlock System for Strontium BEC Machine Advisor: David Weld

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 <u>Advisor:</u> Todd Oakley

Xin Sheng '23 (Physics)

Constrain IGM enrichment and metallicity with the Lyman-alpha and C IV forest correlation function Advisor: Joseph Hennawi

Student Talks by Room (cont.)

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 Advisor: Justin Solomon (MIT)

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Martina Chen '24 (Music Composition)

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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

Student Posters (cont.)

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)

Xinyuan Lin '23 (Physics)

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Kento Wakamatsu Logan '23 (Biology)

CCS Proctor Fellow Altering Allorecognition Patterns in B. schlosseri Chimeras Advisor: Anthony DeTomaso

Solenn 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

Student Posters (cont.)

Leah Moment '23 (Art)

CCS Dr. Rajendra Singh Fellow In Search of Better Advisor: Iman Djouini

Milo Moses '26 (Mathematics)

p-adic duality Advisor: <u>Karel Casteels</u>

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

Marina Stoilova '23 (Biology)

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

Lanxuan Wang '24 (Physics)

CCS Roig Fellow 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_____

Student Posters (cont.)

Sophia Wolczko '23 (Physics)

Polaron Self Energy using DFT and MBPT Advisor: Vojtech Vlcek

Qing Yao '24 (Mathematics)

CCS Dean's Fellow 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



Buchanan Hall



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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.

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For more information: Venilde Jeronimo I venilde@ucsb.edu

