



RACA-CON

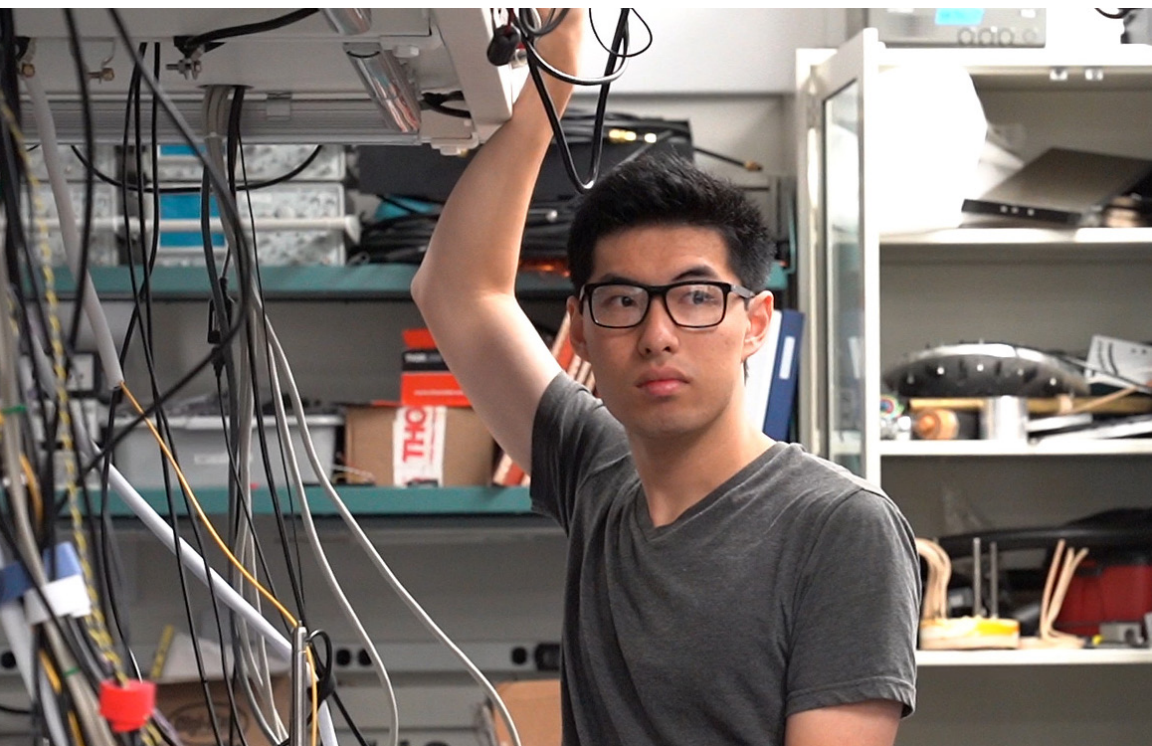
2019 Research and Creative Activities Conference

November 2 | 1:00 PM | Girvetz Hall



UC SANTA BARBARA

College of Creative Studies



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 has been communicated. RACA-CON further enables students to hone their ability to communicate their work to others outside their own field. Presenters 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 the eight CCS majors (Art, Biology, Chemistry and Biochemistry, Computing, Mathematics, Music Composition, Physics, and Writing and Literature). Whether it be an original piece of art or a scientific research project, each RACA-CON presentation is the culmination of many hours of hard work by the students with the aid of their research mentors.

Schedule of Events

12:45 PM – Welcome/Sign In

1:00 PM – Dean's Introduction, Room 1004

1:15 PM – Student Talks, Various Rooms

2:30 PM – Poster Session, Girvetz Courtyard

3:45 PM – Keynote by Jon Ritt, Room 1004

4:45 PM – Closing

Meet the Keynote Speaker



Jon Ritt (CCS Art '18). As a designer, art director, and creative director, Ritt mixes art and commerce to create stories full of distinction, intrigue, and attraction to help brands come to life. He enjoys his role leading talented people to make the world a more interesting and creative place. He finds that mixed minds create powerful ideas especially when surrounded by artistry and clarity, allowing everyone to imagine and realize a brighter future. With this philosophy, Ritt started his own company, Jon Ritt Design Co., in 2012 and now serves as the Executive Creative Director / Chief Creative Officer at The Clorox Corporation / Electro. As part of the 50th anniversary celebration at CCS, Ritt led the effort to build the College's brand identity and designed its very first official logo.

Student Speakers by Room

Talks will occur simultaneously in six 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 1004

Menghang (David) Wang (Physics)

CCS Dean's Fellow

INFLUENCE OF GALAXY CLUSTER ENVIRONMENT ON THE KINEMATICS OF THE STRIPPED

GLOBULAR CLUSTERS

Advisor: Frederic Gibou

Hannah Morley (Writing & Literature)

Delenn Ganyo (Writing & Literature,

Chemistry and Biochemistry,

and L&S Anthropology)

HOMEBREWED: A MUSICAL QUEST

Advisor: Kara Mae Brown

Sean Benevedes (Physics)

CCS Dean's Fellow

TIMING METHODS IN LONG-LIVED

PARTICLE SEARCHES

Advisor: Nathaniel Craig

Parker Shankin-Clarke (Physics)

THE RULES AND ECOLOGICAL

PROCESSES OF THE MICROBIOME

Advisor: Jean Carlson

Jade Morris (Biology)

PORCELLIDIID COPEPODS

ASSOCIATED WITH HERMIT

CRABS (*PAGURUS* SPP.)

IN SOUTHERN CALIFORNIA

Advisor: Armand Kuris

Room 1112

Luca Scharrer (Physics)

SIMULATION AND OPERATION OF

A CRYOGENIC ION TRAP

Advisor: Dave Patterson

Michelle Chiu (Biology)

UTILIZING SPIROPYRAN AS A

PHOTOSURFACTANT TO CONTROL

NANOEMULSION BREAKAGE

Advisor: Javier Read de Alaniz

Michael Straus (Physics)

CCS Dean's Fellow

QUBITS IN TRAPPED IONS

Advisor: Andrew Jayich

Roshelle Carlson (Art - Book Arts)

PENLAND SCHOOL OF CRAFTS

RESIDENCY SUMMER 2019

Advisor: Linda Ekstrom

Sarah Polizzotto (Physics)

CCS Dean's Fellow

ESTABLISHING A HE II-IONIZING

PHOTONS TO STELLAR MASS RATIO

IN METAL-POOR GALAXIES

Advisor: Crystal Martin

Room 1115

Alistair Dobson (Biology)

CCS Tiffney Fellow

AQUATIC INVERTEBRATE SURVEY

FOR AMPHIBIAN PARASITES IN

YOSEMITE NATIONAL PARK

Advisor: Armand Kuris

Mark (Tingyu) Zhao (Physics)

CCS Dean's Fellow

MICRORHEOLOGY ON DNA

NANOSTAR CONDENSATES BY

OPTICAL TRAPPING

Advisor: Omar Saleh

Daniel Guo (Math and Computing)

CCS Dean's Fellow

DATA-DRIVEN LEARNING OF

DIFFERENTIAL OPERATORS USING

NEURAL NETWORKS

Advisor: Paul J. Atzberger

Heitor Megale (Physics)

CCS Dean's Fellow

CELL CYCLE DYNAMICS IN STEM-

CELL MICRO-PATTERNS

Advisor: Sebastian Streichan

Room 1119

Lia Yeh (Computing and Physics)

STATISTICAL ASSERTIONS FOR

DEBUGGING IN QISKIT

Advisor: Margaret Martonosi

Alec Cao (Physics)

CCS Roig Fellow

ULTRACOLD ATOMS: A QUANTUM

PLAYGROUND

Advisor: David Weld

Sriram Ramamurthy (Biology)

SYMBIONT POPULATION DYNAMICS

IN HOSPITE IN A MODEL CNIDARIAN-

DINOFLAGELLATE SYMBIOSIS

Advisor: John R. Pringle

Belle Machado (Writing & Literature)

CHAOS

Advisor: Kara Mae Brown

Ruining Zhang (Physics)

USING MACHINE LEARNIN

FOR REAL-TIME GRAVITATIONAL

WAVE DETECTION FROM BLACK

HOLE MERGERS

Advisor: Charalampos Markakis

co-supervised with Nathan

Johnson-McDaniel

Student Speakers by Room (cont.)

Room 2112

Sven Witthaus (Physics)

CCS Dean's Fellow

ACTIVE STRESSES IN TWO-PHASE
MICROTUBULE SYSTEMS

Advisor: Zvonimir Dogic

Abby Phillips (Art - Book Arts)

PRESERVING POST MORTEM
BEAUTY: ENCASED PUTREFACTION
WITHIN GLASS HERBARIUM

Advisor: Linda Ekstrom

Patrick Tran (Physics)

ROLE OF GEOMETRY IN BROWNIAN
MOTIONS WITHIN CURVED
SURFACES: APPLICATION TO
PROTEIN KINETICS WITHIN LIPID
BILAYER MEMBRANES

Advisor: Paul J. Atzberger

Jacob Miller (Physics)

CCS Dean's Fellow

MULTIPLEXING CONTROL CIRCUIT
FOR MKID CALIBRATION

Advisor: Ben Mazin

Ethan Epperly (Math and Computing)

TOWARDS FAST, DIRECT SOLVERS
FOR 2D INTEGRAL EQUATIONS

Advisor: Shivkumar Chandrasekaran

Room 2115

Weiheng Fu (Physics)

CCS Lewis Fellow

MAGNETIC REFRIGERATION AND
THE MAGNETOCALORIC EFFECT

Advisor: Ram Seshadri

Samantha Rankin (Art - Painting)

CCS Zuk Fellow

THE BESTIARY

Advisor: Hank Pitcher

Meredith Neyer (Physics)

CCS Dean's Fellow

CONSTRAINING THE ESCAPE
FRACTION USING
CIRCUMGALACTIC ABSORPTION

Advisor: Peng Oh

Sharon Tamir (Biology)

CCS Dean's Fellow

THE ROLES OF DESCENDING
NEURONS IN BEHAVIORAL
CONTROL

Advisor: Julie H. Simpson

Max Prichard (Physics)

CCS Dean's Fellow

SHAPE-CHANGING LENSES
AS A TOOL FOR ULTRACOLD
ATOM TRANSPORT

Advisor: David Weld

Student Posters (Alphabetically)

Madeleine Almond (Writing & Literature)

CCS Axline Fellow

THE DEVELOPMENT OF CREEPYPASTA
AS A GENRE

Advisor: Kara Mae Brown

Trevor Anderberg (Physics)

CCS Dean's Fellow

MEASURING THE MEAN SPEED AND
SHEAR FORCES WITHIN ACTIVELY
CROSSLINKED MICROTUBULE
NETWORKS

Advisor: Zvonimir Dogic

Ansuman Bardalai (Math)

CCS Axline Fellow

TROPICAL GEOMETRY OF
PHYLOGENETICS

Advisor: Xiaolei Zhao

Sean Benevedes (Physics)

CCS Dean's Fellow

TIMING METHODS IN LONG-LIVED
PARTICLE SEARCHES

Advisor: Nathaniel Craig

Ron Broner (Physics)

SOLID STATE SYNTHESIS AND
CHARACTERIZATION OF LIGAP 2
O 7: A NOVEL PYROPHOSPHATE
FOR ELECTROCHEMICAL ENERGY
TECHNOLOGY

Advisor: Ramana Chintalapalle

Alec Cao (Physics)

CCS Roig Fellow

ULTRACOLD ATOMS: A QUANTUM
PLAYGROUND

Advisor: David Weld

Roshelle Carlson (Art - Book Arts)

PENLAND SCHOOL OF CRAFTS
RESIDENCY SUMMER 2019

Advisor: Linda Ekstrom

Hirish Chandrasekaran (Physics)

CCS Dean's Fellow

COLD GAS IN A HOT WIND

Advisor: Peng Oh

Michelle Chiu (Biology)

UTILIZING SPIROPYRAN AS A
PHOTOSURFACTANT TO CONTROL
NANOEMULSION BREAKAGE

Advisor: Javier Read de Alaniz

Asad Contractor (Physics)

CCS Dean's Fellow

CAVITY-ENHANCED VELOCITY
MODULATION SPECTROSCOPY

Advisor: Andrew Jayich

Alistair Dobson (Biology)

CCS Tiffney Fellow

AQUATIC INVERTEBRATE SURVEY FOR
AMPHIBIAN PARASITES IN YOSEMITE
NATIONAL PARK

Advisor: Armand Kuris

Shey Dorji (Biology)

CCS Norman F. Sprague III Fellow

USING METAGENOMIC ANALYSIS TO
DETERMINE THE DISTRIBUTION OF
ALKB IN THE WORLD'S OCEANS

Advisor: David Valentine

Michael Drummond (Biology)

CCS Norman F. Sprague III Fellow

GENE EXPRESSION PATTERNS
ACROSS DEVELOPMENT IN THE
BIOLUMINESCENT OSTRACOD
VARGULA TSUJII

Advisor: Todd Oakley

Ethan Epperly (Math and Computing)

TOWARDS FAST, DIRECT SOLVERS
FOR 2D INTEGRAL EQUATIONS

Advisor: Shivkumar Chandrasekaran

Student Posters (cont.)

Sarah Evenson (Physics)

CCS Dean's Fellow

TAPERED OPTICAL FIBERS FOR CHARACTERIZING DIAMOND OPTOMECHANICAL CRYSTALS
Advisor: Ania Jayich

Weiheng Fu (Physics)

CCS Lewis Fellow

MAGNETIC REFRIGERATION AND THE MAGNETOCALORIC EFFECT
Advisor: Ram Seshadri

Andy Garcia (Biology)

EXPLORING THE MECHANISMS AND TIMING OF CORAL BLEACHING UNDER VARIOUS STRESS CONDITIONS USING THE SEA ANEMONE *AIPTASIA* AND ITS ALGAL SYMBIONTS AS A MODEL SYSTEM
Advisor: Christian Renicke

Christian Greer (Physics)

CCS Kelly Fellow

DATA VISUALIZATION AND SONIFICATION OF THEORETICAL STELLAR MODELS
Advisor: JoAnn Kuchera-Morin

Daniel Guo (Math and Computing)

CCS Dean's Fellow

DATA-DRIVEN LEARNING OF DIFFERENTIAL OPERATORS USING NEURAL NETWORKS
Advisor: Paul J. Atzberger

Vivian Hoang (Biology)

CCS Zuk Fellow

INNATE IMMUNE SYSTEM RESPONSE DRIVEN BY INVERTED-REPEAT *ALU* ELEMENTS
Advisor: Diego Acosta-Alvear

Mattie Jones (Writing & Literature)

CCS Zuk Fellow

BAREFOOT IN NEVERLAND
Advisor: Kara Mae Brown

Brian Kent (Physics)

CCS Dean's Fellow

COMPARING FINITE DIMENSIONAL QUANTUM STATES WITH MINIMIZED UNCERTAINTY TO SEMICLASSICAL THEORY
Advisor: David Berenstein

Mitchell Lewis (Computing)

CCS Dean's Fellow

PSEUDOEGO
Advisor: Marcos Novak

Yiluo Li (Physics)

CCS Dean's Fellow

AN RF-DRESSED MAGNETIC FIELD INSENSITIVE QUBIT
Advisor: Andrew Jayich

Chloe Lopez (Chemistry and Biochemistry)

INVESTIGATING DIFFERENCES IN DEGREES TRAVELED AS A MEASURE OF PATH INTEGRATION IN SPATIAL NAVIGATION BETWEEN AGE AND SEX
Advisor: Leroy Laverman

Heather MacGregor (Chemistry and Biochemistry)

CCS Axline Fellow

BENCHMARKING DENSITY FUNCTIONAL METHODS FOR PREDICTION OF GAS-PHASE VIBRATIONAL CIRCULAR DICHROISM SPECTRA
Advisor: Kalju Kahn

Heitor Megale (Physics)

CCS Dean's Fellow

CELL CYCLE DYNAMICS IN STEM-CELL MICRO-PATTERNS
Advisor: Sebastion Streichan

Daria Mileeva (Math)

CCS Dean's Fellow

LINEARIZATION OF MATRIX POLYNOMIALS EXPRESSED IN THE NEWTON AND LAGRANGE BASES AND THEIR CONDITION NUMBERS
Advisor: Maria Isabel Bueno Cachadina

Jacob Miller (Physics)

CCS Dean's Fellow

MULTIPLEXING CONTROL CIRCUIT FOR MKID CALIBRATION
Advisor: Ben Mazin

Jade Morris (Biology)

PORCELLIID COPEPODS ASSOCIATED WITH HERMIT CRABS (*PAGURUS* SPP.) IN SOUTHERN CALIFORNIA
Advisor: Armand Kuris

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CCS Dean's Fellow

CONSTRAINING THE ESCAPE FRACTION USING CIRCUMGALACTIC ABSORPTION
Advisor: Peng Oh

Abby Phillips (Art - Book Arts)

PRESERVING POST MORTEM BEAUTY: ENCASED PUTREFACTION WITHIN GLASS HERBARIUM
Advisor: Linda Ekstrom

Vincent Pisani (Computing)

NAVIGATION BY WALKING IN HYPERBOLIC SPACE USING VIRTUAL REALITY

Advisor: Richert Wang

Sarah Polizzotto (Physics)

CCS Dean's Fellow

ESTABLISHING A HE II-IONIZING PHOTONS TO STELLAR MASS RATIO IN METAL-POOR GALAXIES
Advisor: Crystal Martin

Max Prichard (Physics)

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SHAPE-CHANGING LENSES AS A TOOL FOR ULTRACOLD ATOM TRANSPORT
Advisor: David Weld

Sriram Ramamurthy (Biology)

SYMBIONT POPULATION DYNAMICS IN HOSPITE IN A MODEL CNIDARIAN-DINOFLLAGELLATE SYMBIOSIS
Advisor: John R. Pringle

Samantha Rankin (Art - Painting)

CCS Zuk Fellow

THE BESTIARY
Advisor: Hank Pitcher

Salmanfaizee Sadakkadulla (Biology)

CCS Norman F. Sprague III Fellow
INVESTIGATING LIQUID-LIQUID PHASE SEPARATION IN STRESS GRANULES USING VISCOSITY SENSITIVE MOLECULAR ROTORS
Advisor: Kenneth Kosik

Student Posters (cont.)

Luca Scharer (Physics)
SIMULATION AND THE OPERATION
OF A CRYOGENIC ION TRAP
Advisor: Dave Patterson

Shea Schwennicke (Biology)
CCS Dean's Fellow
INVESTIGATING THE MECHANISM
OF VISUAL PROCESSING IN *CIONA*
Advisor: William Smith

Parker Shankin-Clarke (Physics)
THE RULES AND ECOLOGICAL
PROCESSES OF THE MICROBIOME
Advisor: Jean Carlson

Michael Straus (Physics)
CCS Dean's Fellow
QUBITS IN TRAPPED IONS
Advisor: Andrew Jayich

Alanna Stull (Biology)
LIGHT-TUNABLE HYDROGELS
Advisor: Maxwell Wilson

Sharon Tamir (Biology)
CCS Dean's Fellow
THE ROLES OF DESCENDING
NEURONS IN BEHAVIORAL CONTROL
Advisor: Julie H. Simpson

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INFLUENCE OF GALAXY CLUSTER
ENVIRONMENT ON THE KINEMATICS
OF THE STRIPPED GLOBULAR
CLUSTERS
Advisor: Frederic Gibou

Sven Witthaus (Physics)
CCS Dean's Fellow
ACTIVE STRESSES IN TWO-PHASE
MICROTUBULE SYSTEMS
Advisor: Zvonimir Dogic

Ziyi Xie (Physics)
CCS Dean's Fellow
MIXING MECHANISM FOR MICRO-
CHANNELS
Advisor: Paolo Luzzatto-Fegiz

Jieyu (Jerry) Yan (Physics)
CCS Dean's Fellow
ALGORITHM TO DETERMINE
MOLECULAR STRUCTURES
Advisor: David Patterson

Lia Yeh (Computing and Physics)
BENCHMARKING ZX-CALCULUS
CIRCUIT OPTIMIZATION AGAINST
QISKIT TRANSPILATION
Advisor: Margaret Martonosi

Hanwen Zhang (Math)
CCS Kelly Fellow
STUDYING THE SPECTRAL THEORY OF
LAPLACE-BELTRAMI OPERATORS ON
ALMOST ABELIAN GROUPS
Advisor: Zhirayr Avetisyan

Tingyu (Mark) Zhao (Physics)
CCS Dean's Fellow
MICRORHEOLOGY ON DNA
NANOSTAR CONDENSATES BY
OPTICAL TRAPPING
Advisor: Omar Saleh

Check out the CCS Gallery

The CCS gallery currently features a group show of work by CCS Art students. The gallery is located in the CCS building (494) and will be open to visitors until 5:30 this evening.

Follow CCS on Social Media!



@UCSB_CCS



UCSB College of Creative Studies



Invest in CCS Students who Dare to Dream Big!

A key to the College's success for 50+ years is our unwavering commitment to provide students with hands-on learning opportunities and life-changing experiences. We are grateful to our philanthropic community, providing the critical means for students in all 8 majors to immerse themselves in new experiences, including summer undergraduate fellowships. These fellowships enable students to spend a summer engaged in full-time research in established labs and creative projects at UCSB under the close guidance of faculty.

Did you know that all our student enrichment learning experiences are 100% donor-funded?

Support future scientists, thinkers, and creators who go on to make meaningful contributions in their fields and to society.

Give Today at ccs.ucsb.edu/give

For more information: Venilde Jeronimo | venilde@ucsb.edu | 805.893.5504

