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

Room 1112

Luca Scharrer (Physics)
**CCS Dean’s Fellow**
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)
SYMBIOT 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
Room 2112

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

Abby Phillips (Art - Book Arts)
PRESEVING 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

Madeleine Almond (Writing & Literature)
CCS Axline Fellow
THE DEVELOPMENT OF CREEPPASTA AS A GENRE
Advisor: Kara Mae Brown

Trevor Anderberg (Physics)
CCS Dean's Fellow
MEASURING THE MEAN SPEED AND SHEAR FORCES WITHIN ACTIVELY CROSSED 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 LGAP 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 TSUJI
Advisor: Todd Oakley

Ethan Epperly (Math and Computing)
TOWARDS FAST, DIRECT SOLVERS FOR 2D INTEGRAL EQUATIONS
Advisor: Shivkumar Chandrasekaran
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)
EXPLORE 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 DEPENDENT 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 Axlino 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: Sebastian 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

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**CCS Zuk Fellow**
THE BESTIARY
Advisor: Hank Pitcher

Salmanfazee Sadakkadulla (Biophysics)
**CCS Norman F. Sprague III Fellow**
INVESTIGATING LIQUID-LIQUID PHASE SEPARATION IN STRESS GRANULES USING VISCOSITY SENSITIVE MOLECULAR ROTORS
Advisor: Kenneth Kosik
Luca Scharrer (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**
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**CCS Dean’s Fellow**
**ACTIVE STRESSES IN TWO-PHASE MICROTUBULE SYSTEMS**
Advisor: Zvonimir Dogic

Ziyi Xie (Physics)
**CCS Dean’s Fellow**
**MIXING MECHANISM FOR MICROCHANNELS**
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)
**CCS Kelly Fellow**
**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

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**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.

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**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.

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