9th Annual Graduate Research Symposium
May 10, 2013

Fiat Lux!

UC Santa Cruz • Division of Graduate Studies
Welcome to the 9th Annual Graduate Research Symposium.

UC Santa Cruz is proud to showcase the superb research of our graduate students and to celebrate their academic achievements in the past year.

UCSC’s annual Graduate Research Symposium gives us the opportunity to:

- Highlight the most outstanding graduate research across the whole spectrum of disciplines on our campus;
- Recognize advanced graduate research being conducted in a wide range of programs and settings;
- Celebrate the diversity and innovativeness of our graduate community;
- Provide our graduate students with the chance to learn about the research of their colleagues and to encounter research findings in fields of inquiry related to their own;
- Promote interdisciplinary research conversations among our graduate students.

The Division of Graduate Studies is honored to be able to host this annual event for the first time in the newly-renovated McHenry Library. Please use the adjacent map to find the oral, media and poster presentations listed in this program.

Please also join us for the Awards Reception immediately following the Symposium, with refreshments provided by the Global Village Café. The Deans of each academic division will award a $100 gift certificate for the UCSC bookstore for the best presentation in the division. The UCSC Alumni Association-sponsored prizes, a $150 gift certificate for the UCSC bookstore, also honor presentations in each academic division. Two awards recognizing outstanding presentations in any discipline will also be awarded: a $250 cash Graduate Dean’s award, and a $500 cash award for the Chancellor’s Graduate Research Prize.

Tyrus Miller
Vice Provost and Dean of Graduate Studies
Oral/Live Presentations
Presentation Room 1
Library 2320

1:30 pm  MODELING REGIONAL CLIMATE EFFECTS OF DEFORESTATION IN SOUTHEAST ASIA
Heidi L Stauffer, Earth Sciences

1:40 pm  ADAPTIVE OPTICS STRUCTURED ILLUMINATION MICROSCOPY
Matthew Kissel, Electrical Engineering

1:50 pm  STRUCTURED ILLUMINATION MICROSCOPY
Juan Jose Diaz Leon, Electrical Engineering

2:00 pm  SPOON-FEEDING STARS TO SUPERMASSIVE BLACK HOLES
Morgan MacLeod, Astronomy & Astrophysics

2:10 pm  KINDERGARTENS AND WARTIME MOBILIZATION IN MODERN CHINA, 1900-1958
Melissa Brzycki, History

2:20 pm  --BREAK--

2:30 pm  INDIVIDUAL DIFFERENCES IN PERFORMANCE AND PERSISTENCE: A PATH TO IMPROVED ACHIEVEMENT
Sara Green, Psychology

2:40 pm  THE ROLE OF MUSIC IN THE 1991 PERSIAN GULF WAR
Jessica Loranger, Music

3:00 pm  UNUSUAL LOCAL DISORDER IN THE ROCK-SALT THERMOELECTRIC PbTe
Trevor Keiber, Physics

3:10 pm  THE ROLE OF GENDER IN WORD RECOGNITION
Allan Jay Schwade, Linguistics
### Oral/Live Presentations

**Presentation Room 2**  
**Library 2353**

<table>
<thead>
<tr>
<th>Time</th>
<th>Title</th>
<th>Presenter</th>
<th>Department</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:30 pm</td>
<td>HETEROPHONIC TUNINGS IN THE MUSIC OF LARRY POLANSKY</td>
<td>Giacomo Fiore</td>
<td>Music</td>
</tr>
<tr>
<td>1:40 pm</td>
<td>A NEW CLASS OF PLANETS: UNDERSTANDING THE SUPER-EARTHS AND MINI-NEPTUNES FOUND BY NASA’S KEPLER MISSION</td>
<td>Eric Lopez</td>
<td>Astronomy &amp; Astrophysics</td>
</tr>
<tr>
<td>1:50 pm</td>
<td>UNDERGRADUATE EXPERIENCES IN SUSTAINABILITY PROGRAMMING AT UCSC</td>
<td>Tiffany Wise-West</td>
<td>Environmental Studies</td>
</tr>
<tr>
<td>2:10 pm</td>
<td>THE DEVELOPMENT OF DIVING AND FORAGING ABILITY IN THE SOUTHERN SEA OTTER (<em>ENHYDRA LUTRIS NEREIS</em>)</td>
<td>Nicole Thometz</td>
<td>Ecology &amp; Evolutionary Biology</td>
</tr>
<tr>
<td>2:20 pm</td>
<td>--BREAK--</td>
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<tr>
<td>2:30 pm</td>
<td>“A-b—ab”: AFRICAN-AMERICAN SELF-TEACHING AND CLASSICAL PEDAGOGY IN NINETEENTH-CENTURY SCHOOLBOOKS</td>
<td>Heidi Morse</td>
<td>Literature</td>
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<tr>
<td>2:40 pm</td>
<td>NONTHERMAL EMISSION IN CLUSTERS OF GALAXIES: PROBING DARK MATTER AND COSMIC RAYS WITH OBSERVATIONS IN RADIO AND GAMMA RAYS</td>
<td>Emma Storm</td>
<td>Physics</td>
</tr>
<tr>
<td>2:50 pm</td>
<td>THE COLLECTIVE WATER COLLECTIVE: RESEARCH AND PROBLEM-SOLVING OF WATER ISSUES THROUGH ART PRACTICE</td>
<td>Danielle Williamson</td>
<td>Digital Arts &amp; New Media</td>
</tr>
<tr>
<td>3:00 pm</td>
<td>ICE’S SHADOW WOLVES: INDIGENOUS BORDER PATROL AND THE STRUGGLE TO MAINTAIN TOHONO O’ODHAM LAND RIGHTS</td>
<td>Kelsi Evans</td>
<td>History</td>
</tr>
<tr>
<td>3:10 pm</td>
<td>BIOLUMINESCENCE IN THE DEEP-SEA CTENOPHORE <em>BATHOCYROE FOSTERI</em></td>
<td>Meghan Powers</td>
<td>Ocean Sciences</td>
</tr>
</tbody>
</table>
Oral/Live Presentations

**Presentation Room 3**
**Library 2359**

1:30 pm  PRODIGAL KNOWLEDGE: CONVERSATIONS IN THE STUDY OF RELIGION
Karen deVries, History of Consciousness

1:40 pm  STRATEGIES OF INCORPORATION: THE INTERFACE BETWEEN THE STATE AND INTERNALLY DISPLACED PERSONS IN MEDELLÍN, COLOMBIA
Claudia Lopez, Sociology

1:50 pm  THE SIBYL'S VOICE: PROPHECY AND PERFORMANCE IN EARLY MODERN ITALY
Ariane Helou, Literature

2:00 pm  MUSIC AS A MARK OF CIVILIZATION: THE TELEOLOGY OF SOUND IN NINETEENTH-CENTURY FRENCH TRAVEL WRITING
Lisa Beebe, Music

2:10 pm  SEEDS OF CHANGE: POTATOES AND PEST MANAGEMENT CHALLENGES IN THE RURAL HIGHLANDS OF VENEZUELA
Carlo Moreno, Environmental Studies

2:20 pm  --BREAK--

2:30 pm  UNDERSTANDING TIME VARIABILITY IN FLOWS OF MATTER ONTO BLACK HOLES
Hal Cambier, Physics

2:40 pm  ADAPTIVE OPTICS DEFORMABLE MIRROR
Mohamed Amine Bouchti, Electrical Engineering

2:50 pm  THE SHAPE OF STATIC UNIVERSE
Wei Yuan, Mathematics

3:00 pm  STRUCTURE OF THE ANDROMEDA GALAXY AS REVEALED THROUGH RESOLVED STELLAR POPULATION SURVEYS
Claire Dorman, Astronomy & Astrophysics

3:10 pm  HELPING AT HOME AND THE DEVELOPMENT OF COLLABORATIVE SKILLS: CULTURAL VARIATIONS ACROSS MEXICAN-HERITAGE AND EUROPEAN-HERITAGE SIBLING PAIRS
Lucia Alcala, Psychology
Media Presentations

MUS 127: SOUND, LISTENING, AND CONSCIOUSNESS
Jonathan Hoefs, Music

GROWING PEOPLE: A DOCUMENTARY FILM
Dana Forsberg, Social Documentation

COMRADE SUNSHINE - A SHORT DOCUMENTARY
Cameron Granadino, Social Documentation

A DOCUMENTARY FILM ON ELECTED WOMEN LEADERS’ PARTICIPATION IN GRASSROOTS POLITICS IN RURAL INDIA
Sadia Halima, Social Documentation

Poster Presentations

TRACKING EARLY PASTORAL MOBILITY IN EAST AFRICA
Anneke Janzen, Anthropology

COPY NUMBER ANCESTRAL VARIATION GRAPHS - FIGURING OUT THE HISTORY OF A TUMOR
Tracy Ballinger, Biomolecular Engineering & Bioinformatics

SINGLE-CELL MANIPULATION USING NANOPIPETTES
Michelle Maalouf, Biomolecular Engineering & Bioinformatics

COMPREHENSIVE ASSESSMENTS OF CYTOTOXIC T CELL REPERTOIRES IN THE AUTOIMMUNE DISEASE ANKYLOSING SPONDYLITIS
Ngan Nguyen, Biomolecular Engineering & Bioinformatics

PROTEIN IDENTIFICATION WITH NANOPORES
Adam Novak, Biomolecular Engineering & Bioinformatics

TieDIE: A TIED DIFFUSION MODEL TO IDENTIFY CAUSAL PATHS LINKING GENOMIC PERTURBATIONS TO EXPRESSION STATES IN CANCER
Evan Paull, Biomolecular Engineering & Bioinformatics

IDENTIFYING SOMATIC MUTATIONS IN CANCER USING HIGH-THROUGHPUT SEQUENCING DATA FROM DNA AND RNA
Amie Radenbaugh, Biomolecular Engineering & Bioinformatics

A PATHWAY-CENTRIC ANALYSIS OF TCGA MUTATION DATA
Vladislav Uzunangelov, Biomolecular Engineering & Bioinformatics

TIMING NEANDERTAL-HUMAN ADMIXTURE FROM LINKAGE SURROUNDING PRIVATE ALLELES
Samuel Vohr, Biomolecular Engineering & Bioinformatics
Poster Presentations

REACTION OF GRIGNARD REAGENTS WITH DIISOPROPYLAMINOBORANE. SYNTHESIS OF ALKYL,ARYL, HETEROARYL AND ALLYL BORONIC ACIDS FROM ORGANO(DIISOPROPYL)AMINOBORANE BY A SIMPLE HYDROLYSIS
Christopher Bailey, Chemistry & Biochemistry

SPECTRAL ANALYSIS OF INTERMEDIATES GENERATED DURING DIOXYGEN REDUCTION IN E. COLI BO3 UBIQUINOL OXIDASE USING TIME-RESOLVED OPTICAL ABSORPTION SPECTROSCOPY
Clive Kittredge, Chemistry & Biochemistry

MECHANICAL UNFOLDING OF HUMAN TELOMERE G-QUADRUPLEX DNA PROBED BY INTEGRATED FLUORESCENCE AND MAGNETIC TWEEZERS SPECTROSCOPY
Xi Long, Chemistry & Biochemistry

UCSC BTS 2.0: BUS TRACKING SYSTEM
Kevin Abas, Computer Engineering

OCEANIC SCALES BALANCE THROUGH BIOMIMICRY
Gene Felice, Digital Arts & New Media

OBSERVATIONS OF SLOW SLIP PROCESSES NEAR THE NICOYA PENINSULA, COSTA RICA
Stephen Hernandez, Earth Sciences

SUBMARINE GROUNDWATER DISCHARGE FUELING HARMFUL ALGAL BLOOMS IN MONTEREY BAY
Alanna Lecher, Earth Sciences

AMPLIFICATION OF BEDROCK CANYON INCISION BY WIND
Jonathan Perkins, Earth Sciences

TECTONIC TREMOR RELATED TO 2010 AND 2011 GISBORNE SLOW SLIP EVENTS
Erin Todd, Earth Sciences

THE 5 SEPTEMBER 2012 COSTA RICA MW 7.6 EARTHQUAKE RUPTURE PROCESS FROM JOINT INVERSION OF HIGH-RATE GPS, STRONG-MOTION, AND TELESEISMIC P WAVE DATA AND ITS RELATIONSHIP TO ADJACENT PLATE BOUNDARY INTERFACE PROPERTIES
Han Yue, Earth Sciences

USING ACCELEROMETER “SMART COLLARS” TO IDENTIFY WOLF BEHAVIORAL STATES AND ENERGETIC COSTS
Caleb Bryce, Ecology & Evolutionary Biology

MERCURY BIOACCUMULATION AND TISSUE RELATIONSHIPS IN DEEP-DIVING NORTHERN ELEPHANT SEALS (MIROUNGA ANGUSTIROSTRIS) FROM THE NORTH PACIFIC
Sarah Peterson, Ecology & Evolutionary Biology

LINKING TERRESTRIAL AND MARINE PROTECTION AT THE COASTAL INTERFACE
T. E. Angela L. Quiros, Ecology & Evolutionary Biology

ASSESSMENT CONVERSATIONS IN A MIDDLE SCHOOL SCIENCE CLASSROOM: AN EXPLORATORY STUDY WITH ENGLISH LANGUAGE LEARNERS AND ENGLISH ONLY STUDENTS
Preetha Menon, Education

INTERROGATING THE EDUCATIONAL ARCHIVE: MEMORIES, MIGRATIONS, AND MOVEMENT(S)
Leah Sicat, Education
Poster Presentations

ON CHIP ATOMIC SLOWER
Jennifer Black, Electrical Engineering

METAL ORGANIC CHEMICAL VAPOR DEPOSITION OF SEMICONDUCTOR NANOWIRES ON DISSIMILAR SUBSTRATES
Juan Jose Diaz Leon, Electrical Engineering
Copresenters: David Fryauf and Junce Zhang

MOCVD GROWTH OF INDIUM PHOSPHIDE NANOWIRE NETWORKS FOR THERMOELECTRIC APPLICATIONS
Amanda Flores, Electrical Engineering
Copresenters: Juan Jose Diaz Leon, Junce Zhang and David Fryauf

POST-GROWTH EMISSION WAVELENGTH TUNING OF INDIUM PHOSPHIDE NANOWIRES USING ALUMINUM OXIDE COATING BY PLASMA-ENHANCED ATOMIC LAYER DEPOSITION
David Fryauf, Electrical Engineering
Copresenters: Junce Zhang and Juan Jose Diaz Leon

MICROPARTICLE SORTING ON OPTOFLUIDIC CHIP
Kaelyn Leake, Electrical Engineering

FABRICATION-DEPENDENT PROPERTIES OF SOLID-STATE NANOPORE AND CORRELATED OPTO-ELECTRICAL NANOPARTICLE DETECTION WITH AN ON-CHIP NANOPORE
Shuo Liu, Electrical Engineering

SELECTIVE AREA GROWTH OF INDIUM PHOSPHIDE NANOPILLARS ON AMORPHOUS SILICON SEGMENTS patterned by NANOIMPRINTING LITHOGRAPHY
Kate Norris, Electrical Engineering
Copresenters: David Fryauf, Juan Jose Diaz Leon and Junce Zhang

RESISTIVE SWITCHING BEHAVIOR OF SIO2 CO-SPUTTERED WITH PLATINUM
Kate Norris, Electrical Engineering
Copresenters: David Fryauf, Juan Jose Diaz Leon and Junce Zhang

HYBRID OPTOFLUIDIC INTEGRATION
Josh Parks, Electrical Engineering

OPTICAL DETECTION OF MAGNETIZATION DYNAMICS BEYOND THE DIFFRACTION LIMIT IN INDIVIDUAL NANOMAGNETS IN A DENSE ARRAY
Yu Yahagi, Electrical Engineering

INDIUM PHOSPHIDE NANOWIRE NETWORK FOR THERMOELECTRIC APPLICATIONS
Junce Zhang, Electrical Engineering
Copresenters: David Fryauf and Juan Jose Diaz Leon

CONSERVATION OF NATIVE POLLINATORS AT THE UNIVERSITY OF CALIFORNIA, SANTA CRUZ
Hamutahl Cohen, Environmental Studies

TROPHIC CASCADES: PUMAS, DEER, AND OAKS IN THE SANTA CRUZ MOUNTAINS
Veronica Yovovich, Environmental Studies

BLOODY UNITIES: TRANSATLANTIC MORAVIAN IDENTITIES AND THE LANGUAGE OF RELIGIOUS RADICALISM IN EARLY AMERICA
Benjamin Pietrenka, History

“A GOOD BEATING IS NEEDED TO KEEP HIM IN LINE”: BOYS, BOYHOOD, AND JUVENILE DELINQUENCY IN CALIFORNIA, 1890-1910
Jeffrey Sanceri, History

THE FILTERING LISTENER: EXPLAINING PHONOLOGICAL DISPERSION
Thomas Denby, Linguistics
Poster Presentations

Alphabetical by program and last name

IAMBIC-TROCHAIC REVERSAL IN CUSCO QUECHUA
Peter Fabian, Linguistics

CASE CONCORD AT THE SYNTAX-PHONOLOGY INTERFACE
Mark Norris, Linguistics

PREDICTING STRICT VS. SLOPPY REFLEXIVES IN VP ELLIPSIS
Matthew Ong, Linguistics

GLOBAL PORT CITIES OF THE PACIFIC: SAN FRANCISCO AND VALPARAISO, 1848-50
Kendra Poppy, Literature

WETLAND AMERICAS: MAPPING A LITERARY HISTORY OF NEW ORLEANS
Matt Suazo, Literature

IDENTIFICATION OF ALGAL STRESS SURVIVAL GENES THROUGH FUNCTIONAL SCREENING OF WHOLE TRANSCRIPTOME
Jesica Navarrete, Microbiology & Environmental Toxicology

BIOFILM FORMATION AND ENVIRONMENTAL STRESS IN VIBRIO CHOLERAE
Loni Townsley, Microbiology & Environmental Toxicology

FROM ARMOR TO AchilleS HEEL: TARGETING THE GLYCAN SHIELD OF HIV IN NOVEL VACCINE STRATEGIES
Rachel Doran, Molecular, Cell, & Developmental Biology

A DIRECT ROLE FOR QUAKING IN MUSCLE-SPECIFIC ALTERNATIVE SPLICING
W. Sam Fagg, Molecular, Cell, & Developmental Biology

DARK MATTER, MICROWAVES, AND GALAXIES: HOW TO SHED LIGHT ON A DARK SUBJECT
Eric Carlson, Physics

PROBING DARK MATTER WITH ANTINUCLEI ON THE INTERNATIONAL SPACE STATION
Adam Coogan, Physics

200 MeV PROTON RADIOGRAPHY STUDIES WITH A HAND PHANTOM USING A PROTOTYPE PROTON CT SCANNER
Tia Plautz, Physics

SOCIAL HISTORIES OF CAPITAL DEFENDANTS
Joanna Weill, Psychology

COMMUNICATING SCIENCE RESEARCH TO THE PUBLIC
Rina Shaikh-Lesko, Science Communication

UNDERSTANDING EMPOWERMENT IN WATER AND SANITATION: METHODOLOGY AND FIELD STUDY IN RURAL INDIA
Abigail Brown, Sociology

WOMEN AS PAWNS, WOMEN AS AGENTS: POPULAR DEVELOPMENT STRATEGIES IN INDIA, MEXICO AND ETHIOPIA
Ariana Kalinic, Sociology

BAYESIAN NONPARAMETRIC MODELING FOR MULTIVARIATE ORDINAL REGRESSION
Maria De Yoreo, Statistics & Applied Mathematics

HIDDEN MARKOV MODELS FOR NANOPORE TRANSITION RATE PARAMETER ESTIMATION
Lars Johnson, Statistics & Applied Mathematics

NUMERICAL SIMULATIONS OF BOUNDARY DRIVEN DYNAMOS
Katelyn White, Statistics & Applied Mathematics
Acknowledgements

Thank you to all who contributed to the success of this event...

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Sherol Chen, Saxophone/Flute, Computer Science PhD
David Fryauf, Drums, Electrical Engineering PhD
Raj Maitra, Keyboard, Computer Science MS
Yu Yahagi, Bass Guitar, Electrical Engineering PhD