

Southwestern Undergraduate Mathematics Research Conference 2013

hosted by the University of New Mexico

March 1-3, 2013

PROGRAM

All events will be held at UNM, in the Science and Mathematics Learning Center(SMLC), except saturday dinner, which will be held in the Student Union Building (SUB). See maps on website.

Student talks are 18 minutes long plus 5 minutes for questions and moving between rooms. Invited talks are 50+10 minutes long.

FRIDAY, March 1st

- 5:30-6:50pm Registration and Reception style dinner, SMLC Atrium
6:50-7:00pm Welcoming Remarks by Kevin Malloy, Associate Dean for Research, SMLC Auditorium
7:00-8:00pm **Invited Talk**, SMLC Auditorium
MARK BOSLOUGH, Sandia National Laboratories
Global Catastrophes in Perspective: Asteroid Impacts vs. Climate Change
8:10-8:30pm MathClubs and Moderators Meeting, SMLC Auditorium
8:10-8:30pm Faculty Meeting, SMLC 120
8:30-9:30pm Games, SMLC Atrium
9:30pm Shuttle to Plaza Inn

SATURDAY, March 2nd

- 7:00-8:00am Continental breakfast at the Plaza Inn, Shuttle Pickup to SMLC
8:20-9:30am **Student Talks, Parallel Session 1A**, SMLC Auditorium
8:20 BRIAN VALENZUELA, University of Arizona
Arbitrary Precision of the Riemann-Siegel Approximation of the Riemann Zeta Function off of the critical line
8:43 ANDREW HERRING, University of New Mexico
Parameterizing Quaternion Pythagorean Triples.
9:06 STEPHEN PIETROMONACO, University of New Mexico
 L^p Asymptotics on the Zonal and the Sectoral Harmonics
8:20-9:30am **Student Talks, Parallel Session 1B**, SMLC 120
8:20 KATHERINE BOSSALLER, Northern Arizona University
Symmetries of Generalized Circulant Graphs
8:43 MICHAEL ZOWADA, Northern Arizona University
Three Dimensional Hadamard Array Constructions
9:06 ALEX GUTIERREZ, Arizona State University
Co-Circular Central Configurations of Four Vortices
8:20-9:30am **Student Talks, Parallel Session 1C**, SMLC 356
8:20 GABRIEL ARRILLAGA, University of New Mexico
Modeling the In-host Dynamics of Dengue Virus
8:43 JOSEPH DEAGUERO, University of New Mexico
Modeling Dengue Strain Competition Within a Mosquito
9:06 ASHLEY WEBBER, Arizona State University
The Mathematical Modeling of Multifocal Brain Tumors
9:30-10:00am Morning break, refreshments and pastries, SMLC Atrium

- 10:00-10:46am **Student Talks, Parallel Session 2A**, SMLC Auditorium
 10:00 LAUREN CRIDER, Arizona State University
Maximum-Entropy Surrogation in Multi-Channel Signal Detection
 10:23 ANASTASSIYA SEMENOVA, University of New Mexico
Visualization and algorithm for simulations of electro-magnetic field in an elementary cell of a lattice
- 10:00-10:46am **Student Talks, Parallel Session 2B**, SMLC 120
 10:00 TARYN LAIRD, Northern Arizona University
Trees of Irreducible Numerical Semigroups, Part 1
 10:23 JOSE MARTINEZ, Northern Arizona University
Trees of Irreducible Numerical Semigroups, Part 2
- 10:00-10:46am **Student Talks, Parallel Session 2C**, SMLC 356
 10:00 MARZIA SHAH, Arizona State University
Tuberculosis in the USA
 10:23 JASON YOUNG, Arizona State University
Neural Network Model of Drosophila Antennal Lobe
- 10:50-11:50am **Invited Talk**, SMLC Auditorium
 KRISTIN UMLAND, University of New Mexico
Mathematicians and Mathematics Education
- 11:50-1:10pm Lunch, SMLC Lounge
- 1:10-2:42pm **Student Talks, Parallel Session 3A**, SMLC Auditorium
 1:10 ALEXANDER ELKHOLY, Arizona State University
Simulating Consumer Behavior in a High-Tech Market Environment
 1:33 JEFFREY GORDON, University of New Mexico
Interplay Between Energy-Market Dynamics and Physical Stability of a Smart Power Grid
 1:56 KATLIN FORSTER, Arizona State University
Comparing Extremism, Martyrdom and Symbolic DNA of Terrorism in Twitter from July 2011 to July 2012
 2:19 RACHEL BARROSO, University of Arizona
Life in Industry
- 1:10-2:42pm **Student Talks, Parallel Session 3B**, SMLC Auditorium
 1:10 MICHAEL WOODWARD and DANE JACOBSON, Northern Arizona University
Mathematics of The Game Spinpossible
 1:33 KENNETH QIAN, Arizona State University
Theory and Applications of Evolutionary Game Theory
 1:56 NICOLE TAYLOR, Arizona State University
Galam's Voting Systems and Public Debate Models Revisited
 2:19 HAYDEN COLVIN, Arizona State University
Game Theory: Ropes
- 1:10-2:42pm **Student Talks, Parallel Session 3C**, SMLC 356
 1:10 LENA SNYDER, Arizona State University
Computational Modeling of Glioblastoma Multiforme
 1:33 MORGAN QUEZADA, Arizona State University
Analyzing Glycan Nodes using Support Vector Machines
 1:56 KAVIAN TOOSI, Arizona State University
Is the MAOA Gene a Significant Predictor of Happiness?
- 2:45-3:15pm Coffee break
- 3:15-4:15pm **Invited Talk**, SMLC Auditorium
 ROBERT KRASNY, University of Michigan
Scientific Computing
- 4:30-5:30pm **Graduate Student Panel**, SMLC Auditorium
- 6:00-9:30pm Dinner, games, and surprise, SUB

9:30pm Shuttle to Plaza Inn

SUNDAY, March 3rd

- 7:00-8:00am Continental breakfast at the Plaza Inn, Shuttle pickup to SMLC
- 8:20-9:30am **Student Talks, Parallel Session 4A**, SMLC Auditorium
8:20 YURIDIA LEYVA and AUDREY PADILLA , University of New Mexico
Monsters
8:43 LAURA NAKOLAN, University of Arizona
The Algebra Academy: A Project-Based Approach to Teaching
9:06 RAFAEL HARO, University of Arizona
Euler-Bernoulli Beam Derivation
- 8:20-9:30am **Student Talks, Parallel Session 4B**, SMLC 120
8:20 ALESSANDRA GRAF, Northern Arizona University
A New Graceful Labeling for Pendant Graphs
8:43 ANDREW BAXTER, University of New Mexico
Numerical Semigroups, Basically Full Ideals and their closures
9:06 SELINA GILBERTSON, Northern Arizona University
Investigations of T-avoiding elements of Coxeter groups
- 8:20-9:30am **Student Talks, Parallel Session 4C**, SMLC 356
8:20 BRYAN TOM, Arizona State University
Aging AIDS in the United States
8:43 KATHERINE FREELAND, University of New Mexico
An Exploration of Cancer Reoccurrence and Mortality Trends Using the SEER Data Set
9:06 HAVELL MARKUS, Arizona State University
Statistical Estimation GlomerulusFiltrationRate
- 9:30-10:00am Morning break, refreshments and pastries, SMLC Atrium
- 10:00-10:46am **Student Talks, Parallel Session 5A**, SMLC Auditorium
10:00 TAYLOR CORCORAN, STACI SMITH and QIMING SHAO, University of Arizona
GEOCAM: Geometric Evolution on Computational Abstract Manifolds
10:23 JUSTIN DAHLGREN, University of Arizona
Making an Organization for Members While Benefiting the Community
- 10:00-10:46am **Student Talks, Parallel Session 5B**, SMLC 120
10:00 GEORGE AMAYA, University of Arizona
The Mathematics of Gambling - Probability and Pseudo Random Numbers
10:23 ANTONY SANCHEZ, Arizona State University
Invariant Measures for Hybrid Stochastic Systems
- 10:50-11:50am **Invited Talk**, SMLC Auditorium
CRISTINA PEREYRA, University of New Mexico
Averaging and Analysis
- 11:50am Lunch, SMLC Lounge
1:00pm Shuttle to Plaza Inn and Goodbye