

Sixth Annual

Nebraska Conference for Undergraduate Women in Mathematics

All talks are open to the entire UNL Community

Friday, February 6, 2004

- 2:30** Welcome and Registration, Nebraska Union Auditorium
There will be soft drinks and snacks at the registration
- 3:30** Opening Session, Nebraska Union Auditorium
Welcome: Judy Walker, Co-Chair of the Conference Organizing Committee
Remarks: Richard Hoffmann, Dean of the College of Arts & Sciences
- 3:45** Plenary Session I, Nebraska Union Auditorium
Nancy Kopell, Boston University
Dynamical Systems of the Nervous System: Do Rhythms Help Us Think?
- 5:00** Special Presentation, Nebraska Union Auditorium
Lloyd Douglas, National Science Foundation
NSF Funding Opportunities for Undergraduates and Graduate Students
- 7:00** Banquet, Embassy Suites Hotel – Regency Room
Pre-Dinner Group Photo
Remarks: Ellen Weissinger, Executive Associate Dean for Graduate Studies
Panel Discussion: *Enjoying Life (as a Mathematician)*
Panelists: Renee Burton, National Security Agency
Lloyd Douglas, National Science Foundation
Nancy Kopell, Boston University
Patricial Nelson, University of Wisconsin-LaCrosse
Jennifer Paulhus, University of Illinois
Moderator: Judy Walker, University of Nebraska-Lincoln

Saturday, February 7, 2004

- 8:00** Continental Breakfast, CBA Courtyard
- 8:30** Session 1 - Presentations by Undergraduate Participants
- 8:30 - 8:45**
- CBA 025** Nitsan Ben-Gal, University of Michigan
Large Amplitude Oscillations in Suspension Bridges: Multiple Periodic Solutions to a Nonlinear Spring-Mass Problem
- CBA 128** Karen Lawrence, Elon University
Survival of the Smartest: The Josephus Problem and its Variations

CBA 132 Scarlet Worthen and Lesley Wilson, University of Texas-Tyler
The Edgy Idea(l) of Symbolic Powers

8:50 - 9:05

CBA 025 Elizabeth Davis, Purdue University
Modifications to Bacterial Conjugation Models

CBA 128 Stephanie Hartman, Muhlenberg College
Linear Algebra in Remote Sensing

CBA 132 Stephanie Basha, Santa Clara University
Systems of Orthogonal Polynomials Arising from the Modular j -Function

9:10 - 9:25

CBA 025 Rachel Ward, University of Texas-Austin
A New Model to Describe the Evolution of Recently Duplicated Genes: What Predictions Can We Make Using Mathematics?

CBA 128 Terri Moore, University of Washington
The Search for Davenport's Constant

CBA 132 Kate Liesinger, University of Chicago
Characters and q -series in $\mathbf{Q}(\sqrt{2})$

9:30 Short Break

9:40 Panel Discussion: *Careers Using Mathematics*, CBA 143

Panelists: Fern Hunt, National Institute of Standards and Technology
Renee Burton, National Security Agency
Claudia Miller, Syracuse University
Patricia Nelson, University of Wisconsin-LaCrosse
Sujata Patil, University of Michigan

Moderator: Jim Lewis, University of Nebraska-Lincoln

10:40 Break, CBA Courtyard

11:00 Session 2 - Presentations by Undergraduate Participants

11:00 - 11:15

CBA 025 Tahera Darensburg, Xavier University of Louisiana
Discrete Model of West Nile Like Epidemics

CBA 128 Rana Mikkelsen, Kalamazoo College
An Application of Group Theory to Change Ringing

CBA 132 Stacy Mills, University of Texas-Austin
The n -Iterated Clasp Move and Torus Links

11:20 - 11:35

CBA 025 Martha Minkowski and Andrea Brennan, Grinnell College
Chaos in Action: Discovering a Basin of Attraction

CBA 128 Tiffany Caufield, Boston University and Marie Vega, California State University-Fullerton
A Study of the Relations of Multiple Zeta Values

CBA 132 Stacy Hoehn, Xavier University
Unravelling the Colorings of Knots

11:40 - 11:55

CBA 025 Tara Terry, Oakland University
A Model of Centralized Inventory Control

CBA 128 Janna Severs, Creighton University
First Order Recurrence Relations on Isolate Time Scales

CBA 132 Blerta Shtylla, Lafayette College
Knots, Ortho-projection Matrices and Jones Polynomials

12:00 Lunch, Wick Alumni Center, 1520 R Street (corner of 16th & R)

Note: The plenary speakers, panelists, invited graduate students, and members of the organizing committee have agreed to sit at assigned tables so that participants can have an opportunity to talk with them informally. Check the packet of bios for table assignments.

1:30 Plenary Session II, CBA 143

Fern Hunt, National Institute of Standards and Technology
Mathematical Research at NIST: Some Unexpected Applications

2:30 Poster Session, CBA 107-108

Snacks, CBA Courtyard

- Carrie Abildgaard, Lafayette College
Utility Functions in the Theory of Financial Decision Making
- Brittany Brown, Butler University
Summing Kronecker Class Numbers
- Elisabeth Edwards, Lafayette College
Title: TBA
- Moana Evans, Harvey Mudd College
A Projection-with-Compression Algorithm
- Julijana Gjorgjieva, Harvey Mudd College
A Fast-Fourier Transform for the Symmetric Group
- Stephanie Green, Texas A&M University
Invaders from Below
- Aimee Grimmelmann, Bates College
Mathematical Modeling of the Influenza Pandemic of 1918
- Candice JeanLouis, Morgan State University
Combinatorial Approaches to Elucidating Structural Properties of RNA Chains
- Maria Osorio, Mount Holyoke College
Modifying a Bacterial Conjugation Model
- Alicia Richardson, Morgan State University
Geometric and Linear Algebraic Methods for Approximating Musical Scales
- Gagan Sekhon, California State University - Hayward
Time Release Cryptography Using a Cryptographic Beacon
- Bin Zhang, Coastal Carolina University
Generating Pythagorean Triples

3:45 Session 3 - Presentations by Undergraduate Participants

3:45 - 4:00

CBA 025 Geri Izbicki, University of Connecticut
Numerical Analysis of Nonlinear Differential Equations: The Tacoma Narrows Bridge

CBA 128 Stephanie Kleven, Central College
Labelings of Odd Dimension Sierpinski Graphs

CBA 132 Diana Dimond, Brigham Young University
Line Minimization in Hyperbolic Space

4:05 - 4:20

CBA 025 Maria Butler, Coastal Carolina University
Eventual Periodicity

CBA 128 Marta Kobiela, Texas A&M University
A Walk in the Park: Fun with Graph Theory

CBA 132 Heather Florence, Brigham Young University
Length Minimization of Curve Networks Between Points in the Euclidean Plane

4:25 - 4:40

CBA 025 Deanna Turk, University of Northern Colorado
Distributional Approximations in Genome Reconstruction

CBA 128 Karola Meszaros, Massachusetts Institute of Technology
On the Number of Genus One Circle Trees

CBA 132 Kristina Lund, Grand Valley State University
The Generalized Area Principle

4:45 Short Break

5:00 Session 4 - Presentations by Undergraduate Participants

5:00 - 5:15

CBA 128 Jennifer Novak, Texas A&M University
"Nice Surface!" and Other Ways to Complement Your Knot

CBA 025 Kelly Steinmetz, Truman State University
Minimum Rank of Positive Semi-Definite Matrices with a Prescribed Graph

CBA 132 Jenna Hammang, Valparaiso University
What Do SAT Scores Mean Anyway?

5:20 - 5:35

CBA 128 Kristin Shaw, University of British Columbia
Untangling Braids and Finding the Keys

CBA 025 Laura Lynch, Honors College of Florida Atlantic University
Generalizations of the Heawood Graph and their Properties

CBA 132 Audry Herbert, Loyola University of New Orleans
A Statistical Analysis of College Graduation Rates Using a Least-Squares Linear Regression Model

5:40 - 5:55

CBA 128 Alexa Mater, Reed College
Compact Bilinear Logic and Language

CBA 025 Christina Maher, University of Notre Dame
Multiplicative Maps on Matrix Groups and Semigroups

CBA 132 Heather Flores, University of Nebraska-Lincoln
A Study of Bacterial Flagellar Bundling

6:00 Dinner (see Restaurant Guide)

7:30 Game Night, Embassy Suites, Chancellor 1&2
Hosted by UNL's Women's Undergraduate Math Network

Sunday, February 8, 2004

8:00 Continental breakfast, CBA Food Court

8:30 Session 5 - Presentations by Undergraduate Participants

8:30 - 8:45

CBA 128 Shannon Jessie, Honors College of Florida Atlantic University
Can Predator-Prey Models Explain Invasion Dynamics?

CBA 132 Yumi Watanabe, Calvin College
Geometry, Algebra and Hilbert Series

CBA 025 Aja Johnson, Elon University
When to Spin

8:50 - 9:05

CBA 128 Theresa Johnston, Northern Arizona University
Population Dynamics on Non-Flat Landscapes

CBA 132 Becca Collins, University of Northern Colorado
Counting Triangles Within Triangles

CBA 025 Erika Frugoni, Loyola Marymount University
The Isomorphism Theorem of Noether and Its Natural Habitats

9:10 - 9:25

CBA 128 Jennifer Owens, University of Texas-Austin
Ecological Modeling of Corridors

CBA 132 Nina Miller, Valparaiso University
Counting Quadratic Forms of Rank One and Two

9:30 - 9:45

CBA 128 Elizabeth Green, University of Nebraska-Lincoln
The Effect of a Smart Predator in a One Predator, Two Prey Model

CBA 132 Amy Oliver, Elon University
Ranking Sports Teams Using Infinite Series of Matrices

9:45 Break, CBA Courtyard

10:00 Panel Discussion: *The Graduate School Experience*, CBA 143

Panelists: Abbe Herzig, State University of New York-Albany
Raegan Higgins, University of Nebraska-Lincoln
Nancy Kopell, Boston University
Rochelle Pereira, University of Chicago
Erica Whitaker, The Ohio State University
Roger Wiegand, University of Nebraska-Lincoln
Moderator: Mark Walker, University of Nebraska-Lincoln

11:00 Conference Wrap-up, CBA 143

Remarks: John Meakin, Chair of the UNL Department of Mathematics