

Fifth Annual

Nebraska Conference for **Undergraduate Women** in Mathematics

Conference Schedule

All talks are open to the entire UNL Community

The Conference will give outstanding undergraduate women the opportunity to discuss their own research and to meet other women who share their interest in the mathematical sciences. Conference activities will occur on the university's city campus, a short walk from downtown Lincoln.

Plenary Speakers:

Jennifer Chayes, Microsoft Research

Jean Taylor, Rutgers University

Guests:

Jaclyn Anderson, University of Wisconsin

Kristine Bauer, Johns Hopkins University

Sue Geller, Texas A&M University

Deborah Lockhart, National Science Foundation

Oksana Lassowsky, National Security Agency

Sarah Stovall, Stephen F. Austin State University

Panel Discussions:

Choosing a Graduate School

Careers Using Mathematics

The Organizing Committee gratefully acknowledges generous support from the National Security Agency and the National Science Foundation.

Friday, February 7, 2003

2:30

Welcome and Registration, CBA 143
There will be soft drinks and snacks at the registration

3:30

Opening Session, CBA 143
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, CBA 143
Jean Taylor, Rutgers University
Five Little Crystals and How They Grew

4:45

Break

5:00

Session 1 - Presentations by Undergraduate Participants
CBA 128 (Chair: Leo Chouinard)
CBA 025 (Chair: George Avalos)
CBA 132 (Chair: Oksana Lassowsky)

5:00 - 5:15

CBA 128

Tiffany Troutman, Agnes Scott College
Computing Fibonacci Periods in Dihedral Groups

CBA 025

Dana Pheiff, Penn State University
Experiments and Theory on Instabilities of Damped, Surface Gravity Waves, Progressing in One Dimension on Deep Water

CBA 132

Paula Stirnemann, Truman State University
Performance of the Akaike Information Criterion and Corrected Akaike Information Criterion in Linear Regression Model Selection

5:20 - 5:35

CBA 128

Emily King, Texas A&M University
A Matricial Algorithm for Polynomial Refinement

CBA 025

Inessa Epstein, Rutgers University
Logical Analysis of Data

CBA 132

Elaina Deabay, California State University - Bakersfield
3D Polyomino Achievement Games

5:40 - 5:55

CBA 128

Emma Smith, Massachusetts Institute of Technology

Pictorial Computation of the Free Resolution of $SL_2(\mathbb{Z})$

CBA 025

Marian Allen, Colorado State University

Mathematical Modeling of Various Aspects of Human Immunodeficiency Virus

CBA 132

Shobana Sankaran, University of Texas - Austin

A Statistical Model of Household Purchase Quantity Decisions

7:00

Banquet, Cornhusker Hotel - Lancaster Room

Panel Discussion: *Career, family, hobbies, ...: Making space for it all*

Panelists: Kristine Bauer, Johns Hopkins University

Oksana Lassowsky, National Security Agency

Deborah Lockhart, National Science Foundation

Sarah Stovall, Stephen F. Austin State University

Jean Taylor, Rutgers University

Moderator: Judy Walker, University of Nebraska-Lincoln

Saturday, February 8, 2003

8:00

Continental Breakfast, CBA Courtyard

8:30

Session 2 - Presentations by Undergraduate Participants

CBA 128 (Chair: Al Peterson)

CBA 025 (Chair: Steven Cohn)

CBA 143 (Chair: Thomas Shores)

CBA 132 (Chair: Jaclyn Anderson)

8:30 - 8:45

CBA 128

Diane Vavrichek, Beloit College

On the topology of the Sierpinski triangle

CBA 025

Sarah Brosseau, Colorado State University

Modeling Positive Feedback in Protein Production

CBA 143

Tara Terry, Oakland University

Derivatives of Matrix Functions

CBA 132

Minseung Kim, University of Pennsylvania
Spanning Trees in the Cartesian Product of Complete Graphs

8:50 - 9:05

CBA 128

Erin Bergman, St. Norbert College
Mathematics and Origami

CBA 025

Sarah Croke, University College, Cork
Will It Fly? Models of Thin Elastic Structures Under Pressure

CBA 143

Megan Breit, Augustana College
Hats Required: Perfect and Imperfect Strategies for the Hat Problem

CBA 132

Lara Pudwell and Margie Brewer, Valparaiso University
Graphs of Essentially Equivalent Lattice Paths

9:10 - 9:25

CBA 128

Kathryn Zuhr, Mount Holyoke College
Constructing the Moduli Space of Riemann Surfaces with a Quadrilateral Tiling

CBA 025

Elise Zipkin, University of Michigan
Using a Stage-Based Matrix Model to Predict Sea Lamprey Populations

CBA 143

Tammy Bastian, St. Norbert College
Balancing the Balance

CBA 132

To Be Announced

9:30

Short Break

9:40

Panel Discussion: *Careers in Mathematics*, CBA 143

Panelists: Kristine Bauer, Johns Hopkins
Jennifer Chayes, Microsoft Research
Deborah Lockhart, National Science Foundation
Oksana Lassowsky, National Security Agency
Sarah Stovall, Stephen F. Austin State University

Moderator: Allan Donsig, University of Nebraska-Lincoln

10:40

Break, CBA Courtyard

11:00

Special Presentation, CBA 143
Deborah Lockhart, National Science Foundation
Opportunities for Undergraduates through the National Science Foundation

12:00

Group Photo (on the way to lunch)

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

Note: The plenary speakers, panelists 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

Jennifer Chayes, Microsoft Research

Mathematical Models of the Internet and World Wide Web

2:30

Short Break

2:40

Session 4 - Presentations by Undergraduate Participants

CBA 128 (Chair: Al Peterson)

CBA 025 (Chair: Glenn Ledder)

CBA 132 (Chair: Sue Geller) CBA 143 (Chair: David Pitts)

2:40 - 2:55

CBA 128

Elianna Ruppin, California State University - Northridge

3×3

Algebraic Matrix systems

CBA 025

Julia Arciero, University of Michigan

A Mathematical Investigation of the Growth and Treatment of Tumors

CBA 132

Amanda Milby, Southwestern University

Driving Mis-Coding

CBA 143

Prudence Heck, Rutgers University

Nonmeasurable Sets

3:00-3:15

CBA 128

Laurel Miller-Sims, Smith College

Power Bases for Real Cyclotomic Fields

CBA 025

Heather Flores, University of Nebraska-Lincoln

A Computational Model of the Motion of Flagella

CBA 132

Shalini Reddy, Santa Clara University

Perfect One-Error Correcting Codes and Iterated Complete Graphs

CBA 143

To Be Announced

3:20

Short Break

3:30

Panel Discussion: *Choosing a Graduate School*, CBA 143

Panelists: Jaclyn Anderson, University of Wisconsin
Kristine Bauer, Johns Hopkins
Sue Geller, Texas A&M University
Sarah Stovall, Stephen F. Austin State University
Jean Taylor, Rutgers University

Moderator: Mohammad Rammaha, University of Nebraska-Lincoln

4:30

Break, CBA Food Court

4:50

Session 5 - Presentations by Undergraduate Participants

CBA 128 (Chair: Kristine Bauer)

CBA 143 (Chair: Jennifer Langdon)

CBA 132 (Chair: Sarah Stovall)

CBA 025 (Chair: Deborah Lockhart)

4:50 - 5:05

CBA 128

Marta Kobiela, Texas A&M University

Knots in the Cubic Lattice

CBA 143

Olga Petean, California State University at Dominguez Hills

A Kalman Filter Model of the Croatian Economy

CBA 132

Kathryn Spence, Stetson University

Connectivity of Knight's Graphs on Saw Shaped Boards

CBA 025

Elizabeth Green, University of Nebraska - Lincoln

Mixed vs. Independent Predations in One Predator, Two Prey Systems

5:10 - 5:25

CBA 128

Tori Helms, California State University - Chico

Introduction to Knots

CBA 143

Kira Fernandes, California State University at Dominguez Hills

Hitting Probabilities and the Conditional Empirical Distribution

CBA 132

Karoline Pershell, University of Tennessee at Martin

Mersenne Primes in Imaginary Quadratic Number Fields

CBA 025

Katie Silverthorne and Allison Trumble, Southwestern University

Truncated Tides

5:30 - 5:45

CBA 128

Emilia Lusnia, Huntingdon College

Knot Representation and Simplification

CBA 143

Cheryl Borden, Elon University

BELONGing Here: Determining the Size of the Incoming Class

CBA 132

Katie Price, Northern Arizona University

Number Theoretic Properties of Hexagons in Pascal's Triangle

CBA 025

To Be Announced

5:50

Dinner (see Restaurant Guide)

7:30

Game Night, Arbor Room, Lower Level of the Cornhusker Hotel Hosted by UNL's Women's Undergraduate Math Network

Sunday, February 9, 2003

8:30

Continental breakfast, CBA Food Court

9:00

Session 6 - Presentations by Undergraduate Participants

CBA 025 (Chair: Kirsten Messer)

CBA 132 (Chair: Mark Brittenham)

CBA 143 (Chair: John Meakin)

CBA 128 (Chair: Tom Marley)

9:00 - 9:15

CBA 025

Amber Smith, Colorado School of Mines

Quadratic Spline Collocation Methods for Boundary Value Problems

CBA 132

Erin Haller, University of Missouri - Rolla

A Survey of Semi-Regular Relative Difference Sets

CBA 143

Colleen Duffy, University of St. Thomas

Mathematical Logic

CBA 128

Terri Moore, University of Washington

The Full Elasticity Property in Atomic Monoids

9:20 - 9:35

CBA 025

Katherine Kannen, Ohio State University

Computational Neuroscience

CBA 132

Heba Hathout, Westridge School for Girls

Derangements: Solution by Binomial Inversion

CBA 143

Máire Lane, University College, Cork
Logic Programming: Investigating the Immediate Consequence Operator
CBA 128

Jeanette Olli, Elon University
Binomial Coefficients, Trinomial Coefficients and the Pascal Triangle

9:40 - 9:55

CBA 025

Jennifer Novak, Texas A&M University
Constructing Discrete Models for Competing Species

CBA 132

Eleanor Farrington, Smith College
Phyllotaxis: Mathematical Symmetry in Plants

CBA 143

Jill Schmidt, St. Norbert College
Effects of Capacitively Coupled Electric Fields on Human Adult Mesenchymal Stem Cells

CBA 128

To Be Announced

10:00

Break, CBA Courtyard

10:20

Session 7 - Presentations by Undergraduate Participants

CBA 128 (Chair: Mark Walker)

CBA 025 (Chair: Bo Deng)

CBA 143 (Chair: Sue Geller)

CBA 132 (Chair: Gerald Johnson)

10:20 - 10:35

CBA 128

Yukie Goto, San Francisco State University
Harmonic Polynomials

CBA 025

Natasha Li, Stanford University
A Mathematical Model for Chronic Myelogenous Leukemia (CML) and T Cell Interaction

CBA 132

Kelly Anderson, East Texas Baptist University
Variations on Seymour's Conjecture

CBA 143

Alina Badus, Carleton College
New Variables in the Coupon Collector's Problem

10:40 - 10:55

CBA 128

Katherine Bold, University of Texas - Austin
Rotating Logistic Map

CBA 025

Heidi Perry, University of Washington
Why Mathematicians Do Not Exist in Superposition States

CBA 132

Ila Cobbs, Texas A&M University

Multivariate Statistical Analysis of Vehicle Safety

CBA 143

Erin LeDell, Trinity College

New Poisson Variables in the Coupon Collector's Problem

11:00

Conference Wrap-up, CBA 143

Remarks: Jim Lewis, Chair of the UNL Department of Mathematics and Statistics