

# REU Conference Schedule

July 23, 2019

Talks will take place in the Lederle Graduate Research Tower, in rooms 121, 123, and 1634. Registration begins at 9:30, and the talks start at 10:00. Talks are 20 minutes each plus 5 minutes for questions. We ask that everyone try to keep to time so that people can change rooms between talks if desired.

10:00 LGRT 121 :

**Fibonacci Quilt Game**

Speakers: Alexandra Newlon, Neelima Borade, Annie Xu, Catherine Wahlenmayer  
Supervisor: Steven Miller (Williams)

LGRT 123 :

**Thermodynamics of a Billiard-Simulated Gas**

Speakers: Robin Armstrong  
Supervisor: Yao Li (Umass)

LGRT 1634:

**Modeling Population Distributions and Spatial-Temporal Patterns of Animal Groups with Producer-Scrounger Behavior**

Speakers: Caira Anderson and Issa Susa  
Supervisor: Nesity Tania (Smith)

10:25 LGRT 121 :

**Distribution of Missing Sums in Correlated Sumsets**

Speakers: Thomas Martinez, Dylan King and Chenyang Sun  
Supervisor: Steven Miller (Williams)

LGRT 123 :

**Oblivious Points on Translation Surfaces**

Speakers: Krish Desai, Anthony Ji, Grace Zdeblick  
Supervisor: Ian Adelstein and Aaron Calderon (Yale)

LGRT 1634:

**Stability of Strip for 2D Incompressible Fluid**

Speakers: Victoria Camarena, Christian Madrigal, and Sasha Shrouder  
Supervisor: Jennifer Beichman (Smith)

10:50 LGRT 121 :

**On the Erdős Conjecture for Primitive Sets in Function Fields**

Speakers: Andres Gomez-Colunga, Charlotte Kavalier, Mirilla Zhu  
Supervisor: Nathan McNew (Yale)

LGRT 123 :

**Resistance scaling on the Octacarpet**

Speakers: Claire Canner, William Huang, Michael Orwin

Supervisor: Luke Rogers and Chris Hayes (UConn)

LGRT 1634:

**Investigating skin pattern formation in zebrafish**

Speakers: Addie Harrison, Gisela Hoxha, Gil Parnon, Madison Russell, Berke Turkey

Supervisor: Bjorn Standstede (Brown)

11:15 LGRT 121 :

**Generalizing Zeckendorf's Theorem to Homogeneous Linear Recurrences**

Speakers: Clayton Mizgerd, Thomas Martinez and Chenyang Sun

Supervisor: Steven Miller (Williams)

LGRT 123 :

**Decimation structure of the spectra of self-similar groups**

Speakers: Brett Hungar, Madison Phelps, Johnathan Wheeler

Supervisor: Luke Rogers and Gamal Mograby (UConn)

LGRT 1634:

**Applying a Fokker-Planck Correction to the Perturbed Duffing Oscillator**

Speakers: Mridul Madan

Supervisor: Matthew Dobson (UMass)

11:40 LGRT 121 :

**Zeros of L-Functions near the Central Point and Optimal Test Functions**

Speakers: Charles Devlin

Supervisor: Steven Miller (Williams)

LGRT 123 :

**Can we hear the shape of a fractal? Spectral analysis of self-similar sets**

Speakers: Elizabeth Melville, Nikhil Nagabandi

Supervisor: Luke Rogers and Gamal Mograby (UConn)

LGRT 1634:

**Deep Learning of Biological Neurons**

Speakers: Long Le

Supervisor: Yao Li (UMass)

12:10 Lunch and Posters

1:30 LGRT 121 :

**An Invariant of 3-colored Knots**

Speakers: Olivia Del Guercio, Jack Kendrick, and Hana Sambora

Supervisor: Patricia Cahn (Smith)

LGRT 1634:

**Hedging by Sequential Regression in Generalized Discrete Models and the Follmer-Schweizer decomposition**

Speakers: Sarah Boese, Tracy Cui, Sam Johnston

Supervisor: Oleksii Mostovyi and Gianmarco Molino (UConn)

- 1:55 LGRT 121 :  
**Multigraph Chord Diagrams**  
Speakers: Mrinal Dursun, Joshua Hinman, Logan Rumbaugh  
Supervisor: David Freund (Yale)
- LGRT 1634:  
**Quantum Graph Entropy and the Phase Space visualization of Schrodinger's equation**  
Speakers: Kitty Girjau, Andrew Moore and Dawit Wachelo  
Supervisor: Ivan Contreras (Amherst College)
- 2:20 LGRT 121 :  
**Symmetric variations of the Chan-Robbins-Yuen Polytope**  
Speakers: Max Liu (Mount Holyoke)  
Supervisor: Alejandro Morales (UMass)
- LGRT 1634:  
**Graph Spectral Denoising for Placenta Images**  
Speakers: Andrew Benz, Lilly Gold, Rodrigo Ferreira da Rosa, Neha Verma  
Supervisor: Karamatou Yacoubou Djima (Yale)
- 2:45 LGRT 121 :  
**A Combinatorial Exploration of Chromino**  
Speakers: Nuha Futa (UMass)  
Supervisor: Annie Raymond (UMass)
- LGRT 1634:  
**Graph Topology and Discrete Morse Theory**  
Speakers: Andrew Rosevear and Andrew Tawfeek  
Supervisor: Ivan Contreras (Amherst College)
- 3:10 Break
- 3:40 LGRT 121 :  
**ABBA and the Random Matrix Discotheque**  
Speakers: Keller Blackwell and Wanqiao Xu (Joint work with Neelima Borade, Charles Devlin VI, Renyuan Ma, and Leticia Mattos da Silva)  
Supervisor: Steven Miller (Williams)
- LGRT 1634:  
**A Version of the Elephant Random Walk and Additive Functionals of Finite State Markov Chains**  
Speakers: Jonah Green, Taylor Meredith and Rachel Tan  
Supervisor: Iddo Ben-Ari and Hugo Panzo (UConn)
- 4:05 LGRT 121 :  
**Spies and Traitors: Random Matrix Kaleidoscopes and their Turncoat Eigenvalues**  
Speakers: Neelima Borade and Renyuan Ma (Williams)
- LGRT 1634:  
**The Voter Model on Complete Bipartite Graphs**  
Speakers: Philip Speegle, R Oliver Vandenberg  
Supervisor: Iddo Ben-Ari and Hugo Panzo (UConn)

4:30 LGRT 121 :

**Crescent Configurations In Non-Euclidean Norms**

Speakers: Sara Fish, Dylan King, Catherine Wahlenmayer

Supervisor: Steven Miller (Williams College), Eivindur Palsson (Virginia Tech)

LGRT 1634:

**On a Nonlinear Random Walk on Graphs**

Speakers: Jonah Botvinick-Greenhouse, Connor Fitch, Mark Kong

Supervisor: Iddo Ben-Ari and Hugo Panzo(UConn)