JULIA LINDBERG

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RESEARCH INTERESTS
Primary interests are applications of algebra to topics in data science, communications and optimization.

EDUCATION
University of Wisconsin-Madison, Madison, WI ....May 2022 (Expected)
PhD, Electrical and Computed Engineering
Concentration: Communications, Machine Learning and Signal Processing
Relevant Coursework: Mathematical Methods in Machine Learning, Coding Theory, Information Theory, Probability and Stochastic Processes, Signal Synthesis and Recovery Techniques

University of Wisconsin-Madison, Madison, WI .... May 2016
B.S. Mathematics
B.S. Dance

EXPERIENCE
University of Wisconsin-Madison..Madison, WI
Graduate Research Assistant .... January 2018-Present
- Adapt computational techniques from algebraic geometry to enhance understanding of the power flow equations
- Reduce understanding of the reality of solutions of *2n-2* quadratic equations to understanding of the number of real roots of a univariate polynomial
- Present progress to colleagues and supervisors at weekly meetings
- Author and present work to other researchers in the field at seminars and conferences

University of Wisconsin-Madison..Madison, WI
Teaching Assistant.. August 2017-December 2017
- Led and planned biweekly discussion sections for over 50 students to facilitate comprehension of topics in Calculus II
- Evaluated students in exams and weekly quizzes, then used these results to individualize plans for students to increase success in future exams

University of Wisconsin-Madison..Madison, WI
Grader ....September 2018-Present
- Grade weekly homework assignments for the following classes:
  - Cryptography (Math/ECE/CS 435)
  - Linear Systems (ECE 717)
  - Abstract Algebra (Math 541)
- Critique methods and logical reasoning of students to clarify mathematical reasoning

PUBLICATIONS
1. **J. Lindberg**, A. Zachariah, N. Boston, B. Lesieutre. 2019. "The Distribution of Numbers of Operating Points of Power Networks." *9th International Conference on Industrial and Applied Mathematics (ICIAM).* [Accepted]

2. **J. Lindberg**, A. Zachariah, N. Boston, B. Lesieutre. 2018. "The Geometry of Real Solutions to the Power Flow Equations." *Proceedings of the 56th Annual Allerton Conference on Communication, Control, and Computing.*

PRESENTATIONS

The Geometry of Real Solutions to the Power Flow Equations ....October 2018
Allerton Conference on Communication, Control and Computing
University of Illinois Urbana-Champaign

Applications of Algebra to Power Engineering..September 2018
Applied Algebra Seminar
University of Wisconsin-Madison

Mathematical Modeling of Dance .... April 2016
Undergraduate Research Symposium
University of Wisconsin-Madison

SKILLS

Computer Skills: Proficient with Matlab, Mathematica, Sage, Latex and Microsoft Suite
Languages: Spanish, English
Interests: Dance instructor (8 years), International travel (17 countries)