

# Trung Vu

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## Research interests

Algebraic combinatorics, cluster algebra, exactly solved models, integrable lattice systems, representation theory

## Education

- 2020 – Present **University of Illinois at Urbana-Champaign** – Urbana, Illinois  
PhD in Mathematics  
Advisors: Professor Philippe Di Francesco and Professor Rinat Kedem
- 2020 – 2021 **University of Illinois at Urbana-Champaign** – Urbana, Illinois  
M.Sc in Mathematics  
Advisors: Professor Philippe Di Francesco and Professor Rinat Kedem
- 2016 – 2020 **St. Olaf College** – Northfield, Minnesota  
BA in Mathematics with Concentration (minor) in Neuroscience

## Honors and scholarships

- 2023 University of Illinois at Urbana-Champaign Research Board Funding Recipient
- 2022-2023 Bourgin Departmental Fellowship - University of Illinois at Urbana-Champaign
- Summer 2022 R. Ranga and Shantha Rao Scholarships - University of Illinois at Urbana-Champaign
- 2019 [Steen Fellowship](#) - St. Olaf College  
*\$4,170 to fund independent summer research project*

## Publications

- 2018 **Matrix Square Roots of Polynomials**  
Kosmas Diveris, Trung Vu  
*Pi Mu Epsilon Journal*.
- 2024 **T-system with Slanted Initial Data**  
Philippe Di Francesco, Trung Vu  
[\[preprints\]](#).

## Teaching

### *At University of Illinois at Urbana - Champaign*

- Spring 2022 Teaching Assistant for Calculus 2
- Fall 2021 Teaching Assistant for Calculus 1, Ranked as Excellent by Students
- Spring 2021 Teaching Assistant for Calculus 2, Ranked as Excellent by Students

### *At St. Olaf College*

- Spring 2020 Teaching assistant for Real Analysis 1 and Combinatorics
- Fall 2019 Supplemental Instructor for Linear Algebra

- Spring 2019 Supplemental Instructor for Linear Algebra
- Spring 2018 Supplemental Instructor for Principles of Statistics
- Fall 2017 Academic Tutor for Calculus 1, Calculus 2 and Linear Algebra
- Fall 2017 Teaching Assistant for General Chemistry

## Workshops and Conferences

- March - June 2024 Long Programs: Geometry, Statistical Mechanics, and Integrability  
*Institute of Pure and Applied Mathematics, Los Angeles, CA*
- August 2023 Dimers: Combinatorics, Representation Theory and Physics  
*New York, NY*
- January 2023 Joint Mathematical Meeting  
*Boston, MA*
- April 2022 Analytic Combinatorics in Several Variables Workshop  
*American Institute of Mathematics, San Jose, CA*

## Talks and Poster Presentations

### **Talks**

- August 2023 Slanted  $T$ -system Arctic Phenomenon  
*Dimers: Combinatorics, Representation Theory and Physics, New York, NY*
- April 2023 Slanted  $T$ -system Arctic Phenomenon  
*IRT Seminar, University of Illinois at Urbana-Champaign*
- January 2023  $T$ -system and Dimers  
*Joint Mathematical Meeting, Boston, MA*
- May 2022 Introduction to Analytic Combinatorics in Several Variables with Examples  
*IRT Seminar, University of Illinois at Urbana-Champaign*
- March 2022 XXZ Model and Trigonometric  $R$ -matrix  
*IRT Seminar, University of Illinois at Urbana-Champaign*
- February 2022 Introduction to Bethe Ansatz's Equation and the Algebraic Bethe Ansatz  
*IRT Seminar, University of Illinois at Urbana-Champaign*
- February 2022 Introduction to Yang-Baxter Equation and Quantum Integrable System  
*IRT Seminar, University of Illinois at Urbana-Champaign*
- October 2021  $T$ -system with Slanted Initial Data and Pinecone  
*IRT Seminar, University of Illinois at Urbana-Champaign*
- October 2021 Arctic Curve Phenomenon of  $T$ -system via Multivariate Generating Function  
*IRT Seminar, University of Illinois at Urbana-Champaign*
- May-June 2021  $T$ -system, Dimers and Networks (A series of 5 talks)  
*IRT Seminar, University of Illinois at Urbana-Champaign*
- February 2021 Introduction to the Pentagon Map, Part 1 - Part 3  
*IRT Seminar, University of Illinois at Urbana-Champaign*
- December 2020 Cluster Algebra and  $Y$ -patterns  
*IRT Seminar, University of Illinois at Urbana-Champaign*
- October 2019 Matrix Square Roots of Polynomial  
*Northfield Undergraduate Mathematics Symposium, St. Olaf College, Northfield, MN.*

September 2019 Application of Algebraic Geometry and Geometric Invariant Theory on Functional Neuroimaging  
*Steen's Fellowship Event, St. Olaf College, Northfield, MN.*

### **Poster Presentations**

January 2019 Matrix Square Roots of Polynomial  
*Joint Mathematics Meeting, Undergraduate Poster Session, Baltimore, MD.*

May 2018 Pupillometry as A Measure of Auditory Cognitive Processes and Listening Effort.  
*175th Annual Meeting of the Acoustical Society of America, Minneapolis, MN*

May 2018 A Comparison of Free-field and Headphone Based Sound Localization Tasks.  
*175th Annual Meeting of the Acoustical Society of America, Minneapolis, MN*

## **Undergraduate Research Experience**

*Joint work at St. Olaf College and University of Illinois at Urbana - Champaign via Steen Fellowship*

Summer 2019 **Application of Algebraic Geometry and Geometric Invariant Theory on Functional Neuroimaging**  
Mentor: Graduate Student Megan Finnegan

*At. St. Olaf College*

Summer 2018 **Geographic Variation in Temporal Pattern Recognition in The Acoustic Parasitoid Fly *Ormia Ochracea***  
Mentor: Professor Norman Lee

Fall 2017 – Spring 2020 **Free Field Sound Localization Using the Sound Localization Arc**  
Mentor: Professor Jeremy Loebach

Fall 2017 – Spring 2019 **Pupillometry and Auditory Cognition in Normal Hearing Listeners, Hearing Impaired Individuals and Cochlear Implant Users**  
Mentor: Professor Jeremy Loebach

Summer 2017 **Matrix Square Roots of Polynomial Project**  
Mentor: Professor Kosmas Diveris.

## **Professional Memberships**

2018 – Present Pi Mu Epsilon Mathematical Honor Society

2018 – Present Mathematical Association of America