

Trung Vu

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Citizenship: Vietnam

Research interests

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

Technical skills

Programming and markdown languages

Proficient in: Python, MATLAB, R, HTML, CSS, \LaTeX , Mathematica
Familiar with: C++, Julia

Softwares and packages

Proficient in: Sage, Macaulay2, Qiskit (for quantum computing)
Familiar with: Tensor Flow, Arduino package from MATLAB, Pupil Labs (eye-tracking devices software)

Languages

English (fluent), Vietnamese (fluent)

Education

- 2020 – Present **University of Illinois at Urbana-Champaign** – Urbana, Illinois
PhD 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

- 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.
- 2022 **T-system with Slanted Initial Data**
Philippe Di Francesco, Trung Vu
[in preparation].

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.

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

- April 2022 Analytic Combinatorics in Several Variables Workshop
American Institute of Mathematics, San Jose, CA

Talks and Poster Presentations

Talks

- 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 Meetings, 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

Professional Memberships

- 2018 – Present Pi Mu Epsilon Mathematical Honor Society
- 2018 – Present Mathematical Association of America