

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

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| 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

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| 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
<i>\$4,170 to fund independent summer research project</i> |

Publications

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|------|---|
| 2018 | Matrix Square Roots of Polynomials
Kosmas Diveris, Trung Vu
<i>Pi Mu Epsilon Journal</i> . |
| 2022 | T-system with Slanted Initial Data
Philippe Di Francesco, Trung Vu
<i>[in preparation]</i> . |

Teaching and Mentorship

At University of Illinois at Urbana - Champaign

Spring 2023	Research Mentor at The Undergraduate Research Apprenticeship Program (URAP)
Spring 2022	Teaching Assistant for Calculus 2, Ranked as Excellent by Students
Fall 2021	Teaching Assistant for Calculus 1, Ranked as Excellent by Students
Spring 2021	Teaching Assistant for Calculus 2, Ranked as Excellent by Students
<i>At. St. Olaf College</i>	
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 <i>American Institute of Mathematics, San Jose, CA</i>
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Talks and Poster Presentations

Talks

May 2022	Introduction to Analytic Combinatorics in Several Variables with Examples <i>IRT Seminar, University of Illinois at Urbana-Champaign</i>
March 2022	XXZ Model and Trigonometric R -matrix <i>IRT Seminar, University of Illinois at Urbana-Champaign</i>
February 2022	Introduction to Bethe Ansatz's Equation and the Algebraic Bethe Ansatz <i>IRT Seminar, University of Illinois at Urbana-Champaign</i>
February 2022	Introduction to Yang-Baxter Equation and Quantum Integrable System <i>IRT Seminar, University of Illinois at Urbana-Champaign</i>
October 2021	T-system with Slanted Initial Data and Pinecone <i>IRT Seminar, University of Illinois at Urbana-Champaign</i>
October 2021	Arctic Curve Phenomenon of T-system via Multivariate Generating Function <i>IRT Seminar, University of Illinois at Urbana-Champaign</i>
May-June 2021	T-system, Dimers and Networks (A series of 5 talks) <i>IRT Seminar, University of Illinois at Urbana-Champaign</i>
February 2021	Introduction to the Pentagon Map, Part 1 - Part 3 <i>IRT Seminar, University of Illinois at Urbana-Champaign</i>
December 2020	Cluster Algebra and Y-patterns <i>IRT Seminar, University of Illinois at Urbana-Champaign</i>
October 2019	Matrix Square Roots of Polynomial <i>Northfield Undergraduate Mathematics Symposium, St. Olaf College, Northfield, MN.</i>
September 2019	Application of Algebraic Geometry and Geometric Invariant Theory on Functional Neuroimaging <i>Steen's Fellowship Event, St. Olaf College, Northfield, MN.</i>

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

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