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 Pentagram 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 – Sping 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.