

# Moaaz Alqady – Curriculum Vitae

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## RESEARCH INTERESTS

I am interested in tensor categories, (categorical) representation theory, quantum groups, topological quantum field theories, and their applications to invariants of knots and manifolds and quantum computing. My current projects include:

- Web categories arising from crystal limits of quantum group representations.
  - Drinfel'd centers of tensor categories arising from quantum group representations.
- Previously, I had interests in discrete geometry (Erdős's distinct distance problem).

## EDUCATION

### University of Oregon,

- *PhD in Mathematics*, *Expected June 2027*

Advisor: Victor Ostrik

- *Master of Science in Mathematics* *Jan 2023*

### The American University in Cairo (AUC), *Summa cum Laude* *June, 2021*

- *Bachelor of Science in Mathematics*
- *Minor in Theoretical Computer Science (coursework includes Design and analysis of algorithms, theory of computing, complexity theory, information theory)*
- *Minor in Physics (coursework includes modern physics, classical, quantum, and statistical mechanics)*

[Thesis](#) on the fundamental groups of wild (i.e. non-semilocally simply connected) spaces. Supervised by Michel Hébert.

### Budapest Semesters in Mathematics

*Sep 2020–Dec 2020*

## TEACHING EXPERIENCE

### Department of Mathematics, University of Oregon

- Main instructor:

MATH 307: Introduction to Proofs

*Fall 2024, Fall 2025*

MATH 232: Discrete Mathematics II

*Spring 2024*

MATH 252: Calculus II

*Summer 2023*

MATH 111: College Algebra

*Winter 2022, Summer 2022, Winter 2024*

MATH 112: Elementary Functions

*Spring 2022, Fall 2023*

- Teaching Assistant:

MATH 241: Business Calculus I

*Winter 2023*

MATH 243: Introductory Probability and Statistics

*Fall 2022, Spring 2023*

MATH 111: College Algebra

*Fall 2021*

- Grader:

MATH 446/546: Introduction to Abstract Algebra III

*Spring 2026*

MATH 411/511: Functions of a Complex Variable I

*Spring 2026*

MATH 461/561: Introduction to Mathematical Methods of Statistics I

*Fall 2025*

MATH 649: Abstract Algebra III

*Spring 2025*

### Department of Mathematics and Actuarial Science, AUC

- Undergraduate teaching assistant:

MACT 4134: Abstract Algebra

*Fall 2020*

MACT 2131: Discrete Mathematics

*Fall 2018*

## Awards

- Lorry I. Lokey Interdisciplinary Science Initiative Dissertation Scholarship *2026*
- Lorry I. Lokey Graduate Science Award *2021*
- Paper titled “Distinct Distances with  $\ell_p$  Metrics” received the *Computational Geometry* journal award for best paper by researchers under 35 years old. *2022*
- Recipient of fully-funded merit-based scholarship for undergraduate studies at AUC

**RESEARCH  
AND PROJECTS**

- **The Drinfeld Center of the Generic Temperley–Lieb Category**, (*In Preparation.*)
- **A Coboundary Temperley–Lieb Category for  $\mathfrak{sl}_2$ -Crystals**, Joint with Mateusz Stroiński. *Journal of London Math. Soc.* **113(3)**:e70283, 2025.
- Polly Matthews, **Distinct distances with  $\ell_p$  metrics**, Joint with Polymath REU. *Computational Geometry* **100**:101785, 2022.

**Talks****Research Talks (based on my work):**

- *A Temperley–Lieb Category for  $\mathfrak{sl}_2$ -Crystals*, Jan, 2026  
Workshop on New Developments in Tensor Categories (BIRS, Banff, Canada).
- *A Temperley–Lieb Category for  $\mathfrak{sl}_2$ -Crystals*, October 21, 2025  
Diagrammatic Categorification Conference (ICERM, Providence, RI).
- *Distinct distances with  $\ell_p$  metrics*, Jan 7, 2023  
Joint Mathematical Meetings, Boston, MA

**Expository Talks:**

- *Littleman Paths Crystals (after Mathieu)*, February 25, 2025  
Student Algebra Seminar (University of Oregon).
- *3-Dimensional TQFTs and Modular Tensor Categories*, February 13, 2024  
Student Algebra Seminar (University of Oregon).
- *Spiders for Rank 2 Quantum Groups (after Kuperberg)*, October 31, 2023  
Student Algebra Seminar (University of Oregon).
- *Introduction to Khovanov homology (after Bar-Natan)*, Mar 7, 2023  
Student Algebra Seminar (University of Oregon).
- *Recurrence of distributional limits of finite planar graphs*, Mar 2, 2023  
Student Counting Seminar (University of Oregon).
- *Deligne’s Theorem on Symmetric Tensor Categories*, Nov 22, 2022  
Student Algebra Seminar (University of Oregon).
- *Erdős’s Distinct Distances Problem*, Nov 10, 2022  
Student Counting Seminar (University of Oregon).

**Conferences and  
Workshops**

- New Developments in Tensor Categories, BIRS, Banff, Canada *Jan 2026*
- Diagrammatic Categorification, ICERM, Providence, RI *October 2025*
- Spaces of Tensor Categories, ICMS, Edinburgh *July 2025*
- Modular Lie Theory, Isaac Newton Institute for Mathematical Sciences *July 2025*
- WARTHOG (Workshop on Algebra and Representation Theory Held on Oregonian Grounds), University of Oregon *July 2024*  
Topic: *Coherent-constructible equivalences in local Geometric Langlands and Representation Theory.*
- Workshop on Advances in Lie Theory, Representation Theory, and Combinatorics (Inspired by the work of Georgia M. Benkart), MSRI / Simons Laufer Mathematical Sciences Institute (SLMath), Berkeley *May 2024*
- Canada–Mexico–US Conference in Representation Theory, Noncommutative Algebra, and Categorification, *August 2023*  
Centre de Recherches Mathématiques, Université de Montréal
- WARTHOG (Workshop on Algebra and Representation Theory Held on Oregonian Grounds), University of Oregon *July 2023*  
Topic: *Categorified Coulomb branches*
- Joint Mathematical Meeting Boston, MA *Jan 2023*
- QUACKS II (QUANTum groups, Categorification, Knot invariants, and Soergel bi-

modules), University of Oregon *August 2022*  
• WARTHOG (Workshop on Algebra and Representation Theory Held on Oregonian Grounds), University of Oregon *July 2022*  
Topic: *Infinite dimensional methods in commutative algebra*

**COMMUNITY  
AND  
OUTREACH**

• Vice President of the Association for Women in Mathematics chapter at the University of Oregon *2025-2026*  
• Math Festival Organizer and Station Manager  
An outreach event for hundreds of young math enthusiasts *2024, 2026*  
• Organizer and Lecturer for a [Workshop on Algebraic Geometry](#) at the American University in Cairo *August 2025*  
• Directed Reading Program mentor to undergrad mathematics students  
Topic: Diophantine Approximations and Transcendental Numbers *Winter 2024*  
Topic: Combinatorial Game Theory and Surreal Numbers *Winter 2025*  
Topic: Lie Groups/Algebras in Foundations of Quantum Field Theory *Winter 2025*  
• Diversity Chair of the AMS chapter at the University of Oregon *2024-2025*  
• Organizer and Lecturer for a [Workshop on Representation Theory of Finite Groups](#) at the American University in Cairo *September 2024*  
• Association for Women in Math, University of Oregon Chapter *2023 - 2026*  
Member of the speaker series (helping plan and organize talks) and member of K12 outreach program (organizing and leading math workshops for pre-college students)

**SKILLS**

**Computer:**  $\LaTeX$ , C++ , C, Python, Sage, LiE, LabVIEW  
**Languages:** Arabic (native), English (fluent), French (beginner - able to read math)

**Personal  
Information**

**Citizenship:** Egyptian.  
**Date of Birth:** March 13, 1998.