Nico Courts

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RESEARCH INTERESTS

I am primarily interested in computation and classification of certain classes of Hopf algebras – including quantum groups and Nichols algebras – through the study of their associated geometry, topology, and representation theory. I am studying under the direction of Prof. Julia Pevtsova.

EDUCATION

Ph.D., Mathematics, September 2016 – June 2021 (expected)
University of Washington, Seattle, WA

Bachelor of Science, Mathematics, May 2016
Magna Cum Laude, Phi Beta Kappa, Dean's List, Departmental Honors
University of Southern California, Los Angeles, CA

Budapest Semesters in Mathematics, Fall 2015
Algebraic Topology, Conjecture & Proof, Cryptography, Differential Geometry
Budapest, Hungary

Associates of Science, Mathematics, June 2013
Key of Knowledge, Dean's list, Honors Program
Citrus College, Glendora, CA

RESEARCH EXPERIENCE

Current Research Direction
I have been studying the papers from Drinfel'd and Ginzburg & Kumar on constructing and computing the cohomology of the (small) quantum groups. The next step will to see how the arguments in the latter were used by Mastnak, Pevtsova, et al. to compute the cohomology of finite dimensional pointed Hopf algebras with the hope of extending these results to even wider classes of Hopf algebras.

Graduate Reading Courses
University of Washington, Seattle, WA

- Group Schemes and Algebraic Groups – Prof. Julia Pevtsova – *Autumn 2018*
- Abelian Categories – Prof. James Zhang – *Spring 2018*
- Representation Theory – Prof. Julia Pevtsova – *Winter/Spring 2017*
- (Simplicial) Cohomology – Prof. Steve Mitchell – *Autumn 2016*

Undergraduate Reading Courses
University of Southern California, Los Angeles, CA

- **Tools in Modern Representation Theory**. Prof. Paul Sobaje supervised as I explored topics in representations, categories, algebraic topology, module theory, Lie algebras, and support varieties. *Spring 2015*
- **Commutative Rings, Fields, and Galois Theory**. Under the direction of Prof. Charles Lanski, I explored topics in graduate algebra with the intent of understanding Galois theory and its applications. *Fall 2014*

TEACHING EXPERIENCE

Graduate Teaching Assistant — Autumn 2016 – Present
University of Washington, Seattle, WA

- **As an instructor:**
  - Math 124 – Calculus I (Summer 2018)
  - Math 308 – Matrix Algebra (Spring 2019)
- **As a teaching assistant:**
  - Math 120 – Precalculus (Autumn 2017)
  - Math 124 – Calculus I (Winter 2017, Winter 2019)
  - Math 125 – Calculus II (Autumn 2016, Spring 2017)
  - Math 126 – Calculus III (Summer 2017, Winter 2018, Spring 2018)
  - Math 381 – Discrete Mathematical Modeling (Autumn 2018)

Lead Teaching Assistant and Instructor — Summer 2016
SCS Noonan Scholars (previously South Central Scholars), Los Angeles, CA

- Independently developed and delivered approximately 50 hours of instruction and five exams to gifted university-bound students in calculus 2 and 3.

Various Teaching and Mentorship Positions — Spring 2012 – Summer 2013
Citrus College, Glendora, CA

- PAGE Program Tutor
- SIGMA Mentor
- Math Tutor

SERVICE

Washington Directed Reading Program

- Supervised an undergraduate student in a reading course based around Rebecca Weber's book *Computability Theory* in Autumn 2018.
- Assisting in an administrative capacity in Spring 2019.

Math Hour Olympiad
University of Washington, Seattle
Spring 2018
Volunteer Judge

Math Day
University of Washington, Seattle
Volunteer 2017 and 2018

EVENTS ATTENDED

ABC Workshop
University of Washington, Seattle
November 11, 2018
Geometric and Cohomological Methods in Algebra

Joint Mathematical Meetings
Seattle, WA
January 2016

SKILLS & HOBBIES

Languages:

- **English** – This is my native language.
- **German** – Ich kann ziemlich gut Deutsch sprechen, lesen, und verstehen!
- **Hungarian** – Beszélek csak egy kicsit magyarul.
- **Programming** – C++, C#, **Go**, **Haskell**, Java, **LaTeX**, PHP, **Python**.

Computer Skills: Web/Application Development, Server Administration, Sage, Mathematica, Windows, Linux, FreeBSD.

Life Skills: Critical Thinking, Abstract Reasoning, Communication, Objectivity, Empathy.

Hobbies: Hiking, Jogging, Rollerskating, Appreciating the Wonders of the PNW.