Nigel Pynn-Coates

Curriculum Vitæ

Kurt Gödel Research Center
Institute of Mathematics
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Employment

2023–present	**FWF ESPRIT Senior Postdoc**, *University of Vienna*, Vienna, Austria.
2020–2023	**Zassenhaus Assistant Professor**, *The Ohio State University*, Columbus, OH.

Education

2020	**PhD in Mathematics**, *University of Illinois at Urbana–Champaign*, Urbana, IL.

- Advisor: Lou van den Dries
- Dissertation title: *On asymptotic valued differential fields with small derivation*

2015	**MS in Mathematics**, *University of Illinois at Urbana–Champaign*, Urbana, IL.
2014	**B.Arts Sc. (Honours)**, *McMaster University*, Hamilton, ON.

- Graduated *summa cum laude*

Research interests

Mathematical logic and algebra, model theory and applications, valued fields, differential fields, ordered fields, o-minimality, transseries

Publications and preprints

Preprints

6. N. Pynn-Coates. "Transserial tame pairs", 2024, submitted.
   https://arxiv.org/abs/2408.07033

5. N. Pynn-Coates. "Model theory of differential-henselian pre-H-fields", 2024, submitted.
   https://arxiv.org/abs/1910.12171

Journal articles

4. E. Kaplan and N. Pynn-Coates. "Monotone T-convex T-differential fields", *Model Theory*, vol. 4 (2025), no. 1, pp. 55–100.
   https://arxiv.org/abs/2309.13951

3. N. Pynn-Coates. "Differential-henselianity and maximality of asymptotic valued differential fields", *Pacific J. Math.*, vol. 308 (2020), no. 1, pp. 161–205.
   https://arxiv.org/abs/1805.05890

2. N. Pynn-Coates. "Newtonian valued differential fields with arbitrary value group", *Comm. Algebra*, vol. 47 (2019), no. 7, pp. 2766–2776.
   https://arxiv.org/abs/1805.01423

1. L. van den Dries and N. Pynn-Coates. "On the uniqueness of maximal immediate extensions of valued differential fields", *J. Algebra*, vol. 519 (2019), pp. 87–100. `https://arxiv.org/abs/1707.07034`

In preparation

N. Pynn-Coates. "Dimension in differential-henselian pre-H-fields".

A. Gehret, E. Kaplan, and N. Pynn-Coates. "Small sets in the asymptotic couple of the field of logarithmic transseries".

Grants

2023–2026	**FWF (Austrian Science Fund) ESPRIT 450**, 316,036.52 €.
2022–2027	**NSF Continuing Grant DMS-2154086** (PI status relinquished 2023), US$149,332.
2021–2023	**AMS-Simons Travel Grant** (relinquished 2022), US$5,000.

Awards and fellowships

2021–2023	**NSERC Postdoctoral Fellowship** (declined), C$90,000.
2020	**University Fellowship**, US$10,628, *University of Illinois*, Urbana, IL.
2019	**Department TA Instructional Award**, US$500, *University of Illinois*, Urbana, IL.
2015–2018	**NSERC Postgraduate Scholarship–Doctoral**, C$63,000.

Presentations

Invited conference talks

2024	**Exponential Fields Workshop**, *Banff International Research Station*, Banff, AB.
2023	**Special Session on Model Theory, ASL North American Annual Meeting**, *University of California, Irvine*, Irvine, CA.
	ASL Special Session on Tame Geometry and Applications to Analysis, Joint Mathematics Meetings, Boston, MA.
2022	**Special Session on Model Theory and its Applications, AMS Spring Central Virtual Sectional Meeting**, *Purdue University*, West Lafayette, IN.
2021	**Model Theory Special Session, ASL North American Annual Meeting (virtual)**, *University of Notre Dame*, South Bend, IN.
2019	**Special Session on Model Theory, AMS Fall Central Sectional Meeting**, *University of Wisconsin*, Madison, WI.

Seminar talks

2024	**Logic Colloquium**, *University of Vienna*, Vienna, Austria.
	PKU Model Theory Seminar (online), *Beijing International Center for Mathematical Research, Peking University*, Beijing, China.
	Logic Colloquium, *UCLA*, Los Angeles, CA.
	Number Theory and Algebraic Geometry Seminar, *KU Leuven*, Leuven, Belgium.
	Oberseminar Logik, *University of Bonn*, Bonn, Germany.
	Logic Seminar, *The Ohio State University*, Columbus, OH.
2023	**Model Theory Seminar**, *University of Vienna*, Vienna, Austria.

Model Theory and Applications Seminar, *Purdue University*, West Lafayette, IN.

2022 **Model Theory Seminar**, *McMaster University*, Hamilton, ON.

Logic Seminar, *University of Illinois at Chicago*, Chicago, IL.

Model Theory Seminar, *Fields Institute*, Toronto, ON.

2021 **Topological and Differential Expansions of O-minimal Structures (online seminar)**, *Universidad de los Andes and University of Leeds*.

2020 **Caltech–UCLA Logic Seminar**, *University of California*, Los Angeles, CA.

2019 **Logic Seminar**, *The Ohio State University*, Columbus, OH.

Mathematics Seminar, *Rose-Hulman Institute of Technology*, Terre Haute, IN.

Logic Seminar, *University of Illinois at Chicago*, Chicago, IL.

Model Theory Seminar, *University of Waterloo*, Waterloo, ON.

Model Theory Seminar, *CUNY Graduate Center*, New York, NY.

Kolchin Seminar in Differential Algebra, *CUNY Graduate Center*, New York, NY.

2018 **Mathematical Logic Seminar**, *Carnegie Mellon University*, Pittsburgh, PA.

AWM Graduate Student Colloquium, *University of Illinois*, Urbana, IL.

2017 **Model Theory Seminar**, *McMaster University*, Hamilton, ON.

Contributed conference talks

2024 **Model Theoretical Aspects of the Notion of Independence and Dimension**, *Research Institute for Mathematical Sciences, Kyoto University*, Kyoto, Japan.

Colloquium Logicum, *Austrian Academy of Sciences*, Vienna, Austria.

2019 **ASL Winter Meeting (with Joint Mathematics Meetings)**, Baltimore, MD.

2018 **ASL North American Annual Meeting**, *Western Illinois University*, Macomb, IL.

Graduate Student Conference in Logic, *University of Wisconsin*, Madison, WI.

2017 **Graduate Student Conference in Logic**, *University of Illinois*, Urbana, IL.

Teaching

2020–2023 **Instructor of record**, *The Ohio State University*, Columbus, OH.
- Spring 2023: Abstract Algebra I (MATH 4580)
- Fall 2022: Abstract Algebra I (MATH 4580)
- Fall 2022: Introduction to Mathematical Logic (MATH 5051)
- Fall 2021: Foundations of Higher Mathematics (MATH 3345)
- Fall 2021: Introduction to Mathematical Logic (MATH 5051)
- Spring 2021: Foundations of Higher Mathematics (MATH 3345), online section
- Spring 2021: Foundations of Higher Mathematics (MATH 3345), hybrid section
- Fall 2020: Foundations of Higher Mathematics (MATH 3345)

Summer 2019 **Illinois Scholars Program math instructor**, *University of Illinois at Urbana–Champaign*, Urbana, IL.
- ISP is a transition program for select students from historically underserved groups organized by the Office of the Vice Chancellor for Diversity, Equity & Inclusion.
- I and two other PhD students designed and taught the math component, including college algebra and discovery-based math enrichment.

2014–2019 **Teaching assistant**, *University of Illinois at Urbana–Champaign*, Urbana, IL.
- Fall 2019: Calculus I (MATH 221) Merit Program, on *List of Teachers Ranked as Excellent**
- Fall 2018: Calculus I (MATH 221) Merit Program, on *List of Teachers Ranked as Excellent**
- Fall 2017: Calculus I (MATH 221) Merit Program, on *List of Teachers Ranked as Excellent*
- Fall 2016: Calculus II (MATH 231), on *List of Teachers Ranked as Excellent**
- Fall 2015: Calculus III (MATH 241), on *List of Teachers Ranked as Excellent*
- Fall 2014: Calculus III (MATH 241), on *List of Teachers Ranked as Excellent**

* = additionally received "outstanding" rating.
Merit Program aims to attract and retain students from groups underrepresented in STEM and to develop a community of scholars at Illinois from these groups.

2011–2014 **Teaching assistant**, *McMaster University*, Hamilton, ON.
- Calculus (ARTSSCI 1D06)

Mentoring

2023 **ROMUS undergrad. research supervision**, *The Ohio State University*, Columbus, OH.
- Funded and supervised summer undergrad. research student in ROMUS (Research Opportunities in Mathematics for Underrepresented Students) through NSF DMS-2154086

Undergraduate directed reading mentor, *The Ohio State University*, Columbus, OH.
- Informally directed summer reading of two undergrad. students in abstract algebra

2021 **Mentor to Ohio State Academy student**, *The Ohio State University*, Columbus, OH.
- Provided informal math enrichment to high school student taking classes at OSU

2018, 2019 **Merit Program TA Mentor**, *University of Illinois*, Urbana, IL.
- Merit Program for Emerging Scholars targets students with high potential who are members of groups underrepresented in STEM
- Provided class supervision and mentorship to TAs teaching in the program for the first time

Outreach, service, and organizing

2022–2023 **Logic Seminar co-organizer**, *The Ohio State University*, Columbus, OH.

2022 **Radical Pi (undergraduate math club) Seminar invited speaker**, *The Ohio State University*, Columbus, OH.

2018–2019 **Graduate Affairs Committee**, *University of Illinois*, Urbana, IL.

2014 **Gathering for Gardner activity leader**, *University of Illinois*, Urbana, IL.

Languages

English, *native*.

German, *B1*.