Gabriel Conant
Assistant Professor

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Employment

2024-pres.	Assistant Professor, **University of Illinois at Chicago**, Chicago, IL
2021-2024	Assistant Professor, **The Ohio State University**, Columbus, OH
2019-2021	Research Associate (postdoc), **University of Cambridge**, Cambridge,UK
2016-2019	Lumpkins Postdoctoral Fellow (RAP), **University of Notre Dame**, Notre Dame, IN
2015-2016	Visiting Assistant Professor, **University of Notre Dame**, Notre Dame, IN

Education

Aug. 2015	Ph.D. in Pure Mathematics, **University of Illinois at Chicago**, Chicago, IL
May 2010	MS in Pure Mathematics, **University of Illinois at Chicago**, Chicago, IL
May 2008	BA in Mathematics, **Colgate University**, Hamilton, NY

Grants and Awards

2024-pres.	**NSF Grant DMS-2348901**, $219,595 *Structure and regularity in continuous model theory*
2019-2023	**NSF Grant DMS-2204787** (moved from DMS-1855503), $119,074 *Model theory and definable additive combinatorics*
2018	**AMS Simons Travel Grant**, University of Notre Dame
2014	**NSF Research Training Group Pre-doctoral Fellow**, University of Illinois at Chicago RTG in algebraic geometry and related fields (number theory, complex dynamics, and model theory)
2008	**Edwin J. Downie '33 Award for Mathematics**, Colgate University
2006	**Sisson Prize in Mathematics**, Colgate University

Extended Research Appointments

Fall 2021	**Fields Institute**, Toronto, Canada Thematic Program on Trends in Pure and Applied Model Theory
Spring 2018	**Institute Henri Poincaré**, Paris, France Model Theory, Combinatorics, and Valued Fields Trimester Program

Research Interests

Model theory and applications to **group theory** and **arithmetic combinatorics**

Publications

1. G. Conant, E. Hrushovski, & A. Pillay, *Compactifications of pseudofinite and pseudo-amenable groups*, **Groups, Geometry, and Dynamics** (to appear), 23 pages.
2. G. Conant & A. Kruckman, *Three surprising instances of dividing*, **Journal of Symbolic Logic** (to appear), 18 pages.
3. G. Conant, C. d'Elbée, Y. Halevi, L. Jimenez, & S. Rideau-Kikuchi, *Enriching a predicate and tame expansions of the integers*, **Journal of Mathematical Logic** (to appear), 42 pages.
4. N. Chavarria, G. Conant, & A. Pillay, *Continuous stable regularity*, **Journal of the London Mathematical Society** 109 (2024), 36 pages.
5. G. Conant & A. Pillay, *Approximate subgroups with bounded VC-dimension*, **Mathematische Annalen** 388 (2024) 1001-1043.

6. G. Conant, K. Gannon, & J. Hanson, *Keisler measures in the wild*, **Model Theory** 2 (2023) 1-67.
7. G. Conant, A. Pillay, & C. Terry, *Structure and regularity for subsets of groups with finite VC-dimension*, **Journal of the European Mathematical Society** 24 (2022) 583-621.
8. G. Conant & J. Hanson, *Separation for isometric group actions and hyperimaginary independence*, **Fundamenta Mathematicae** 249 (2022) 97-109.
9. G. Conant, *Quantitative structure of stable sets in arbitrary finite groups*, **Proceedings of the American Mathematical Society** 149 (2021) 4015-4028.
10. G. Conant, *Stability in a group*, **Groups, Geometry, and Dynamics** 15 (2021) 1297-1330.
11. G. Conant & A. Pillay, *Pseudofinite groups and VC-dimension*, **Journal of Mathematical Logic** 21 (2021).
12. G. Conant & K. Gannon, *Associativity of the Morley product of invariant measures in NIP theories*, **Journal of Symbolic Logic** 86 (2021) 1293-1300.
13. G. Conant & K. Gannon, *Remarks on generic stability in independent theories*, **Annals of Pure and Applied Logic** 171 (2020).
14. G. Conant & M. C. Laskowski, *Weakly minimal groups with a new predicate*, **Journal of Mathematical Logic** 20 (2020).
15. G. Conant, *On finite sets of small tripling or small alternation in arbitrary groups*, **Combinatorics, Probability & Computing** 29 (2020) 807-829.
16. G. Conant, A. Pillay, & C. Terry, *A group version of stable regularity*, **Mathematical Proceedings of the Cambridge Philosophical Society** 168 (2020) 405-413.
17. G. Conant & A. Kruckman, *Independence in generic incidence structures*, **Journal of Symbolic Logic** 84 (2019) 750-780.
18. G. Conant, *Stability and sparsity in sets of natural numbers*, **Israel Journal of Mathematics** 230 (2019) 471-508.
19. U. Andrews, G. Conant, & I. Goldbring, *Definable sets containing productsets in expansions of groups*, **Journal of Group Theory** 22 (2019) 63-82.
20. G. Conant, *Extending partial isometries of generalized metric spaces*, **Fundamenta Mathematicae** 244 (2019) 1-16.
21. G. Conant, *Multiplicative structure in stable expansions of the group of integers*, **Illinois Journal of Mathematics** 62 (2019) 341-364.
22. E. Bering, G. Conant, & J. Gaster, *On the complexity of finite subgraphs of the curve graph*, **Osaka Journal of Mathematics** 55 (2018) 795-808.
23. G. Conant & A. Pillay, *Stable groups and expansions of $(\mathbb{Z}, +, 0)$*, **Fundamenta Mathematicae** 242 (2018) 267-279.
24. G. Conant, *There are no intermediate structures between the group of integers and Presburger arithmetic*, **Journal of Symbolic Logic** 83 (2018) 187-207.
25. G. Conant, *Forking and dividing in Henson graphs*, **Notre Dame Journal of Formal Logic** 58 (2017) 555-566.
26. G. Conant, *An axiomatic approach to free amalgamation*, **Journal of Symbolic Logic** 82 (2017) 648-671.
27. G. Conant, *Neostability in countable homogeneous metric spaces*, **Annals of Pure and Applied Logic** 168 (2017) 1442-1471.
28. G. Conant, *Distance structures for generalized metric spaces*, **Annals of Pure and Applied Logic** 168 (2017) 622-650.
29. G. Conant, *A remark on strict independence relations*, **Archive for Mathematical Logic** 55 (2016) 535-544.
30. G. Conant & C. Terry, *Model theoretic properties of the Urysohn sphere*, **Annals of Pure and Applied Logic** 167 (2016) 49-72.

Preprints

1. G. Conant & A. Pillay, *An analytic version of stable arithmetic regularity*, **arXiv 2401.14363**, 28 pages.
2. G. Conant & C. Terry, *Pseudofinite proofs of the stable graph regularity lemma*, **arXiv 2308.16809**, 15 pages.
3. G. Conant, K. Gannon, & J. Hanson, *Generic stability, randomizations, and NIP formulas*, **arXiv 2308.01801**, 38 pages.
4. A. Abd Aldaim, G. Conant, & C. Terry, *Higher arity stability and the functional order property*, **arXiv 2305.13111**, 71 pages.

Invited Talks

2024   *Beijing Model Theory Conference*, Chinese Academy of Sciences
2024   *Special Session on Model Theory*, ASL North American Annual Meeting
2024   *Special Session on Model Theory*, AMS Spring Central Sectional Meeting
2024   *Department Colloquium*, University of Illinois at Chicago
2024   *Department Colloquium*, University of Illinois at Urbana-Champaign
2024   *Géométrie et Théorie des Modèles*, Ecole Normale Supérieure
2023   *Mid-Atlantic Mathematical Logic Seminar*, Rutgers University
2023   *Neostability Workshop*, Banff International Research Station
2022   *Midwest Model Theory*, University of Illinois at Chicago
2022   *ASL Special Session on Model-theoretic Classification Program*, 2022 Joint Mathematics Meetings
2022   *Special Session on Model Theory and its Applications*, AMS Spring Central Sectional Meeting
2021   *Workshop on Model Theory and Combinatorics*, Fields Institute
2021   *Workshop on Trends in Pure and Applied Model Theory*, Fields Institute
2021   *Department Colloquium*, The Ohio State University
2021   *Canadian Discrete and Algorithmic Mathematics*
2021   *Géométrie et Théorie des Modèles*, Ecole Normale Supérieure
2021   *ASL Winter Meeting at JMM*, plenary lecture
2020   *Groups and Model Theory* (cancelled), Stevens Institute of Technology
2020   *Antalya Algebra Days XXII* (cancelled), Nesin Mathematics Village
2020   *Model Theory: Groups, Geometries, and Combinatorics*, Mathematical Research Institute of Oberwolfach
2019   *Workshop on Recent Applications of Model Theory*, Fields Institute
2019   *Model Theory and Mathematical Logic*, University of Maryland
2019   *Journées sur les Arithmétiques Faibles*, CUNY Graduate Center
2019   *Pure Mathematics Conference*, Southern Illinois University
2019   *Department Colloquium*, Vassar College
2019   *Department Colloquium*, Wesleyan University
2019   *Department Colloquium*, Iowa State University
2018   *Pure and Applied Model Theory*, University of Illinois
2018   *Neostability Workshop*, International Research Station, Casa Matemática Oaxaca
2018   *Special Session on Model Theory*, ASL European Logic Colloquium, University of Udine
2018   *Ramsey Theory in Logic,* Combinatorics, and Complexity, Universitá di Bologna, Bertinoro
2018   *South and East of England Model Theory Network*, University of Norwich
2018   *Department Colloquium*, The Hebrew University of Jerusalem
2018   *Combinatorics and Additive Number Theory*, CUNY Graduate Center
2018   *Special Session on Model Theory*, ASL North American Annual Meeting, Western Illinois University
2018   *Model Theory of Finite and Pseudofinite Structures*, University of Leeds
2018   *Model Theory and Combinatorics*, Institut Henri Poincaré
2017   *Special Session on Model Theory*, CMS Annual Winter Meeting, University of Waterloo
2017   *Nonstandard Methods in Combinatorial Number Theory*, American Institute of Mathematics
2017   *Model Theory in Wrocław*, Instytut Matematyczny, Uniwersytet Wrocławski
2016   *Model Theory of Finite and Pseudofinite Structures*, University of Leeds
2016   *Graduate Student Conference in Logic* (faculty plenary speaker), University of Notre Dame
2016   *Midwest Model Theory Day*, University of Illinois at Chicago
2015   *Homogeneous Structures Workshop*, Banff International Research Station
2015   *Special Session on Model Theory*, AMS Central Fall Sectional Meeting, Loyola University Chicago
2015   *Neostability Workshop*, International Research Station, Casa Matemática Oaxaca
2015   *BLAST*, University of North Texas

Teaching

Tutorials and Mini-Schools

2021 Tutorial on "Stability and Combinatorics" (2 hours of lectures)
   Thematic Program on Trends in Pure and Applied Model Theory at the Fields Institute

2020 Lecturer and online instructor for "An Excursion Into Model Theory and Its Applications"
   London Mathematical Society Online Lecture Series

2016 Thematic Program in Model Theory (6 hours of lectures)
   Undergraduate Summer School at the University of Notre Dame

Summer Undergraduate Research

2023 OSU ROMUS (Research Opportunities in Mathematics for Underrepresented Students)
   Tora Ozawa & David Zeng (undergraduate), Aycin Iplikci Arodirik (graduate assistant)

2024 OSU ROMUS (Research Opportunities in Mathematics for Underrepresented Students)
   Jad Damaj & Teresa Pollard (undergraduate), Hannah Sheats (graduate assistant)

Reading Courses

Fall 2024	Continuous Logic (3 students)	University of Illinois at Chicago
Summer 2024	Hazal Aydogdu	The Ohio State University
Summer 2024	Sean Basa	The Ohio State University
Fall 2023	Baraa Abd Aldaim	The Ohio State University
Summer 2023	Devrim Pekmezci	The Ohio State University

Regular Courses

2024-pres. **Assistant Professor, University of Illinois at Chicago**
   MATH 210 Multivariable Calculus
    Fall 2024 (45 students, 47 students)

2021-2024 **Assistant Professor, The Ohio State University**
   MATH 6004 Model Theory: Spring 2024 (9 students)
   MATH 6003 Set Theory: Spring 2023 (6 students)
   MATH 8000 Topics in Model Theory: Fall 2022 (7 students)
   MATH 3345 Foundations of Higher Mathematics:
    Spring 2024 (30 students)
    Spring 2022 (31 students, 33 students)

2019-2021 **Research Associate, University of Cambridge**
   Model Theory (Part III, examinable): Michaelmas Term 2020
   Applications of Pseudofinite Model Theory (graduate, non-examinable): Easter Term 2020

2015-2019 **Research Associate Professor, University of Notre Dame**
   MATH 40910 Topics in Mathematical Logic: Spring 2019 (10 students)
   MATH 20550 Calculus III: Fall 2015 (36 students), Fall 2016 (66 students), Fall 2017 (64 students)
   MATH 10560 Calculus II: Fall 2015 (57 students), Spring 2016 (65 students)
   MATH 10250 Elements of Calculus I: Spring 2016 (29 students), Fall 2017 (69 students)
   MATH 10360 Calculus B for the Life and Social Sciences: Fall 2018 (43 students)
   MATH 10130 Beginning Logic: Fall 2016 (33 students)
   MATH 10120 Finite Mathematics: Spring 2017 (27 students)

2012-2015 **Lecturer (graduate student), University of Illinois**
   MATH 300 Writing for Mathematics: Fall 2013, Spring 2014
   MATH 210 Calculus 3: Fall 2012
   Summer Enrichment Workshop - Math 090 Intermediate Algebra: Summer 2013

2008-2013 **Teaching assistant (graduate student), University of Illinois**
   MATH 181 Calculus 2, MATH 180 Calculus 1, MATH 160 Finite Math for Business,
   MATH 121 Precalculus, MATH 090 Intermediate Algebra

Advising

Postdocs	Leo Jimenez	The Ohio State University	2023-2024
PhD students	Al Baraa Abd Aldaim	The Ohio State University	2023-present
	Devrim Pekmezci	University of Illinois at Chicago	2023-present
Masters students	Louis Xiang Li	The Ohio State University	2023-present
Academic advisees	Tyler Beauregard	The Ohio State University	2023-2024
	Gradmar Maldonado	The Ohio State University	2023-2024
	Devrim Pekmezci	The Ohio State University	2022-2023
First-year mentees	Ali Farsad	The Ohio State University	Spring 2024
	Chavdar Lalov	The Ohio State University	2023-2024
	Hugh Dennin	The Ohio State University	2022-2023

Committees

Departmental Service Committees

2024-2025	Colloquium Committee	University of Illinois at Chicago
2023-2024	Graduate Studies Committee, Mentoring Committee	The Ohio State University
2022-2023	Mentoring Committee	The Ohio State University

PhD Defense Committees

2016 Somayeh Vojdani (advisor: Anand Pillay), University of Notre Dame

PhD Candidacy Committees

2024 Yewen Sun (advisor: Caroline Terry), The Ohio State University
2023 Juan Pablo De Rasis (advisor: Jennifer Park), The Ohio State University
2019 Nicolas Chavarria (advisor: Anand Pillay), University of Notre Dame

Other Professional Service

Conferences and Workshops

2025 Special Session in Model Theory (organizer)
      ASL North American Annual Meeting
2023 Geometric and Combinatorial Configurations in Model Theory (scientific committee)
      University of Freiburg
2022 Combinatorics Meets Model Theory (organizer)
      University of Cambridge
2019 AMS Special Session on Recent Advances in Regularity Lemmas (organizer)
      Joint Mathematics Meetings
2017 Special Session in Model Theory (organizer)
      AMS Spring Central Sectional Meetings
2016 16th Graduate Student Conference in Logic (organizer)
      University of Illinois at Chicago

Seminars

2024-pres.	Logic Seminar (organizer), University of Illinois at Chicago
2023-2024	Logic Seminar (organizer), The Ohio State University
2013	Graduate Student Colloquium (organizer), University of Illinois at Chicago
2011-2013	Louise Hay Logic Seminar (organizer) University of Illinois at Chicago

Panels

June 2021 Non-research aspects of job/grant applications and in careers in mathematics
           ASL Annual Meeting, University of Notre Dame

Miscellaneous

2016-pres.	AMS MathSciNet Reviewer
2013-pres.	Creator and webmaster of **forkinganddividing.com** (an online resource for education and research in model theory)