

# James E. Hanson

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## CONTACT INFORMATION

Iowa State University  
Department of Mathematics  
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## EMPLOYMENT

### Iowa State University

Assistant Professor, Fall 2024 to present

### University of Maryland, College Park

Novikov Postdoctoral Fellow, Fall 2021 to Spring 2024

I was offered a postdoctoral position at the ANR Project AGRUME for Spring 2021 working with Tomás Ibarlucía at the Université de Paris, but the pandemic prevented me from officially accepting the position. Instead, I worked remotely with Ibarlucía on a related research project.

## EDUCATION

### University of Wisconsin–Madison

PhD in Mathematics, December 2020  
MA in Physics, December 2016

### University of Minnesota, Twin Cities

BSc in Mathematics and Physics, May 2012

## RESEARCH INTERESTS

My research interests lie primarily in model theory and in the intersection of logic and real analysis. In the domain of model theory, I am interested in neostability theory and continuous logic. Neostability theory attempts to broaden the applicability of model-theoretic ideas to broader classes of mathematical structures. Continuous logic has applications in analysis, such as ergodic theory and  $C^*$ - and other operator algebras, and in some parts of algebra, such as Berkovich analytic geometry. I am also interested in computable analysis and computable structure theory.

## PUBLICATIONS

1. J. E. HANSON, *Any function I can actually write down is measurable, right?* *Expositiones Mathematicae*, August 2025. [10.1016/j.exmath.2025.125718](https://doi.org/10.1016/j.exmath.2025.125718).
2. J. HANSON, *Strongly Minimal Sets and Categoricity in Continuous Logic*. *Memoirs of the American Mathematical Society*, June 2025. [10.1090/memo/1574](https://doi.org/10.1090/memo/1574).
3. J. E. HANSON, *Topometric characterization of type spaces in continuous logic*. *Journal of Logic and Analysis*, February 2025. [10.4115/jla.2025.17.1](https://doi.org/10.4115/jla.2025.17.1).
4. J. E. HANSON, *Approximate categoricity in continuous logic*. *Archive for Mathematical Logic*, December 2024. [10.1007/s00153-024-00952-3](https://doi.org/10.1007/s00153-024-00952-3).
5. J. E. HANSON, *A simple continuous theory*. *Journal of Mathematical Logic*, October 2024. [10.1142/S0219061324500260](https://doi.org/10.1142/S0219061324500260).
6. J. E. HANSON, *Bounded ultraimaginary independence and its total Morley sequences*. *Model Theory*, April 2024. [10.2140/mt.2024.3.39](https://doi.org/10.2140/mt.2024.3.39).
7. J. E. HANSON, *Some semilattices of definable sets in continuous logic*. *Journal of Logic and Analysis*, April 2024. [10.4115/jla.2024.16.3](https://doi.org/10.4115/jla.2024.16.3).

8. J. E. HANSON, *Approximate isomorphism of metric structures*. Mathematical Logic Quarterly, September 2023. 10.1002/malq.202200076.
9. G. CONANT, K. GANNON, J. HANSON, *Keisler measures in the wild*. Model Theory 2, no. 1 (2023): 1-67. 10.2140/mt.2023.2.1.
10. J. HANSON, *Metric spaces are universal for bi-interpretation with metric structures*. Ann. Pure Appl. Logic (2023). 10.1016/j.apal.2022.103204.
11. J. HANSON, T. IBARLUCÍA. *Approximate isomorphism of randomization pairs*. Confluentes Mathematici, Volume 14 (2022) no. 2, pp. 29-44. 10.5802/cml.85.
12. G. CONANT, J. HANSON, *Separation for isometric group actions and hyperimaginary independence*. Fundamenta Mathematicae 259 (2022), 97-109. 10.4064/fm167-2-2022.
13. J. HANSON, *Analog reducibility*. Journal of Logic and Computation, 2021, exab036. 10.1093/logcom/exab036.
14. W. COTTRELL, J. HANSON, A. HASHIMOTO, A. LOVERIDGE, AND D. PETTENGILL, *Intersecting D3-D3' brane system at finite temperature*. Phys. Rev. D, 95, 044022 (2017). 10.1103/PhysRevD.95.044022.
15. W. COTTRELL, J. HANSON, AND A. HASHIMOTO, *Dynamics of  $\mathcal{N} = 4$  supersymmetric field theories in  $2 + 1$  dimensions and their gravity dual*. J. High Energ. Phys. 2016, 12. 10.1007/JHEP07(2016)012.

PUBLICATIONS  
(PREPRINTS)

1. N. ACKERMAN, C. FREER, K. GANNON, J. E. HANSON, R. PATEL, *Generic sampling and invariant measures on the space of  $k$ -uniform hypergraphs*. arxiv.org/abs/2510.17090
2. B. BODOR, S. BRAUNFELD, AND J. E. HANSON, *Labelled growth rates of  $\omega$ -categorical structures and applications in choiceless set theory*. arxiv.org/abs/2509.12656
3. J. E. HANSON, *A combinatorial characterization of Kim's lemma for pairs of bi-invariant types*. arxiv.org/abs/2507.21366
4. J. E. HANSON, *Indiscernible extraction at small large cardinals from a higher-arity stability notion*. arxiv.org/abs/2506.19147. Submitted.
5. A. BAUER, J. E. HANSON, *The countable reals*. arxiv.org/abs/2404.01256. Submitted.
6. J. E. HANSON, *Uniqueness of constructible models in continuous logic*. arxiv.org/abs/2501.02679.
7. K. GANNON, J. E. HANSON, *Model theoretic events*. arxiv.org/abs/2402.15709. Submitted.
8. G. CONANT, K. GANNON, J. E. HANSON, *Generic stability, randomizations, and NIP formulas*. arxiv.org/abs/2308.01801. Submitted.
9. J. E. HANSON, *Bi-invariant types, reliably invariant types, and the comb tree property*. arxiv.org/abs/2306.08239. Submitted.
10. J. HANSON, *A metric set theory with a universal set*. arxiv.org/abs/2302.02258. Submitted.

## TALKS

*Measurability properties of model-theoretic invariant types*

- Iowa State University Logic Seminar. (September 2025)

*Special coheirs and model-theoretic trees*

- Logic Colloquium 2025 at TU Wien. (July 2025)
- ICICL Summer Research Conference at Drake University. (June 2025)
- Iowa State University Logic Seminar. (September 2024)
- 2024 AMS Spring Central Sectional Meeting Special Session on Model Theory, University of Wisconsin–Milwaukee. (April 2024)

*Forcing with model-theoretic trees*

- PKU Model Theory Seminar. (November 2024)
- University of Maryland Logic Seminar. (October 2023)

*Independent in arbitrary theories via automorphism groups and large cardinals*

- SEALS 2024, University of Florida. (March 2024)

*Tameness and definability in continuous logic*

- Iowa State University. (January 2024)

*Generic stability and randomizations*

- Mid-Atlantic Mathematical Logic Seminar Spring Fling 2023. (May 2023)
- Joint Mathematics Meetings. (April 2022)

*How bad could it be? The semilattice of definable sets in continuous logic*

- NYLogic Logic Workshop. (April 2023)
- Wesleyan Logic Colloquium. (November 2022)
- University of Maryland Logic Seminar. (October 2022)

*Bounded ultraimaginary independence*

- 2023 North American Annual Meeting of the ASL. (March 2023)
- UCLA Logic Colloquium. (May 2022)
- University of Maryland Logic Seminar. (February 2022)

*An introduction to continuous logic*

- VCU Analysis, Logic and Physics Seminar. (April 2022)

*Definable sets in continuous logic*

- University of Maryland Logic Seminar. (September 2021)

*A gentle introduction to continuous logic*

- University of Maryland Logic Seminar. (September 2021)

*A Versatile Counterexample for Invariant Types and Keisler Measures outside NIP*

- Notre Dame Model Theory Seminar (Digital). (March 2021)
- Séminaire de Logique Lyon-Paris (Digital). (March 2021)

Joint work with Gabriel Conant and Kyle Gannon.

*Strongly Minimal Sets in Continuous Logic* (regarding essential continuity)

- Online Logic Seminar (Digital). (August 2021)

*Definability and Categoricity in Continuous Logic*

- UW Logic Seminal (Digital), University of Wisconsin-Madison. (April 2020)

*Skolemization in Continuous Logic*

- UW Logic Seminar, University of Wisconsin-Madison. (November 2019)

*Strongly Minimal Sets in Continuous Logic* (regarding categoricity)

- Logic Seminar, University of Illinois at Chicago. (October 2019)
- AMS Sectional Meeting, Special Session on Model Theory, University of Wisconsin-Madison. (September 2019)
- Graduate Student Conference in Logic XX, University of Illinois at Chicago. (April 2019)
- UCI Logic and Set Theory Seminar, University of California, Irvine. (April 2019)
- UW Logic Seminar, University of Wisconsin-Madison. (February 2019)

*Separable and inseparable Gromov-Hausdorff categoricity in continuous logic*

- Association for Symbolic Logic North American Annual Meeting, Western Illinois University. (May 2018)
- Graduate Student Conference in Logic XIX, University of Wisconsin-Madison. (April 2018)

*Encoding metric structures as metric spaces*

- UW Logic Seminar, University of Wisconsin-Madison. (February 2018)

WORKSHOPS

*A Convergence of Computable Structure Theory, Analysis, and Randomness*, March 19-March 24, 2023, in Banff.

AWARDS

University of Wisconsin-Madison, Department of Mathematics

- *Excellence in Mathematical Research Award*, October 2019.
- *Physical Sciences Award*, October 2018.

University of Wisconsin-Madison, Department of Physics

- *Van Vleck Fellowship for Teaching Assistants*, September 2012.
- *David L. Huber Fellowship*, September 2012.
- *Firminiac Fellowship*, September 2012.

University of Minnesota

- *Professor Hans H. Dalaker Scholarship for Undergraduate Mathematics*, April 2011.
- *Presidential Scholarship*, August 2008.
- *Maroon and Gold Leadership Award*, August 2008.
- *National Merit Scholarship*, August 2008.
- *Undergraduate Research Scholarship*, August 2008.