TRANG, NAM
CURRICULUM VITAE

CURRENT POSITION	Associate Professor (Tenure)

CONTACT INFORMATION

Department of Mathematics
University of North Texas, Denton
Denton, TX, 76203

Nam.Trang@unt.edu
http://math.unt.edu/~ntrang

RESEARCH INTERESTS

- Mathematical logic, set theory, particularly inner model theory, forcing axioms, and determinacy
- Applied statistics, particularly deep learning and computer vision.

INDUSTRY EMPLOYMENT

Data Scientist/Computer Vision Researcher (part-time at Adaptive Computation LLC)
ntrang@adaptivecomputation.com

AWARDS AND GRANTS

- The Howard Tucker Award, Outstanding Senior in Mathematics, UC Irvine, 2007.
- UNT Department of Mathematics Faculty Research Award, 2020.
- NSF Grant DMS-1565808, 2016–2018 (PI on the NSF research award for project titled: "Descriptive Inner Model Theory, Large Cardinals, and Combinatorics") at UC Irvine, $95359.
- NSF Grant DMS-1849295, 2018–2019 (PI on the NSF research award for project titled: "Descriptive Inner Model Theory, Large Cardinals, and Combinatorics") at University of North Texas, $39241.
- NSF Grant DMS-1855757, 2019–2022 (PI on the NSF research award for project titled: "Descriptive Inner Model Theory and Its Applications") at University of North Texas, $120591.
- NSF CAREER Grant DMS-1945592, 2020–2025 (PI on the NSF CAREER award for project titled: "Current and Future Development of the Core Model Induction") at University of North Texas, $403716.
- DARPA AIEE Grant (2021–2023): Senior Personnel on the project In-Pixel Intelligent Processing (IP2) at Adaptive Computation.
- AIM SQUARE grant, 2023-2026, co-PI for project entitled "Large Cardinal Axioms and Left Distributive Algebras".
- Simons Fellowship, 2025, funded by the Simons Foundation, $78805.
- NSF Grant DMS-2449780, 2025–2027, PI on the project entitled "Inner Models, Combinatorics, and Determinacy" at University of North Texas, $100000.

BOOK MANUSCRIPTS

1) Sargsyan, G., and **Trang, N.**, *The largest Suslin axiom*, ASL Lecture Notes in Logic series, volume 56, Cambridge University Press, 2024, 403 pages.

SIGNIFICANT PUBLICATIONS

1) Adolf, D., Sargsyan, G., **Trang, N.**, Wilson, T., and Zeman M., Ideals and strong axioms of determinacy, Journal of the American Mathematical Society (JAMS), 37: 1203-1273, 2024, 71 pages.

2) Chan, W., Jackson, S., and **Trang, N.**, Almost disjoint families under determinacy, Advances in Mathematics, 437, 2024, 34 pages.

3) Sargsyan, G. and **Trang, N.**, The exact consistency strength of generic absoluteness

for universally Baire sets, Forum of Mathematics, Sigma, 12, 2024, 70 pages.

4) Chan, W., Jackson, S., and **Trang, N.**, Almost everywhere behavior of functions according to partition measures , Forum of Mathematics, Sigma, 12, 2024, 36 pages.

5) Rodríguez, D. and **Trang, N.**, $L(\mathbb{R}, \mu)$, Advances in Mathematics, 324(01), 2018, 355-393.

STUDENTS AND
POSTDOCS
MENTORED

- D. Rodriguez, PhD, 2016, Carnegie Mellon University.
- J. Prein, Master's, 2022, UNT.
- W. Chan, Postdoc, 2023-2024, UNT.
- D. Adolf, Postdoc, 2022-2023, UNT.
- D. Levinson, Postdoc, 2024-current, UNT.
- I. Champion, PhD student, 2023-current, UNT.
- S. Brown, PhD student, 2023-current, UNT.
- B.Walker, PhD student, 2023-current, UNT.

PROFESSIONAL
PREPARATIONS

- BS in Information and Computer Science, UC Irvine, 2007.
- BS in Mathematics, UC Irvine, 2007.
- PhD in Mathematics, UC Berkeley, 2013.

PREVIOUS
APPOINTMENTS

- Assistant Professor: September 2018 – August 2024, University of North Texas, Denton, TX, USA
- Visiting Assistant Professor: July 2015 – June 2018, University of California, Irvine; Irvine, CA, USA
- Postdoctoral Associate: August 2013 – June 2015, Carnegie Mellon University; Pittsburgh, PA, USA

GRADUATE
ADVISORS AND
POSTDOCTORAL
SPONSORS

- John R. Steel, University of California, Berkeley; Berkeley, CA, USA (Thesis advisor)
- Ernest Schimmerling, Carnegie Mellon University; Pittsburgh, PA, USA (Postdoctoral Sponsor)
- Martin Zeman, University of California, Irvine; Irvine, CA, USA (Postdoctoral Sponsor)

SYNERGETIC AND
EDUCATIONAL
ACTIVITIES

- Contributor to the Virtual Math Museum (http://3d-xplormath.org/) by writing Java code for 3D-XplorMath-J, which is a cross-platform museum that exhibits a host of interesting mathematical objects and helps learning geometry via visualization.
- 2014: Served on Chris Lambie-Hanson's PhD thesis committee at CMU.
- 2016: Mentored and served on Daniel Rodriguez's PhD thesis committee at CMU.
- Co-organizer of the 2016 and 2023 Conferences on Descriptive Inner Model Theory and Hod Mice at UC Irvine, Irvine, CA.
- 2017: Instructor for Math Circle classes at UC Irvine.
- NSF Panelist: 2016, 2020, 2022.
- 2020-2022: Advisor/mentor for the Math Incubator projects at UNT with 1 graduate student and 2 undergraduate students that results in the paper "On the cop number of subdivisions of graphs".

- 2020: Served on PhD thesis committees of Jose Chavez and Logan Crohn at UNT.
- 2022: Chair of Joseph Prein's Master's thesis committee at UNT.
- 2023: Served on PhD thesis committees of Cody Olsen at UNT.
- 2024: local organizer of the BLAST 2024 meeting, April 6–9, 2024 at UNT.
- 2024: special session organizer of the 2024 North American ASL meeting, May 14–17, 2024 at Iowa State University.

OTHER PUBLICATIONS AND PREPRINTS

1) Trang, N., HOD in natural models of AD^+, Annals of Pure and Applied Logic, 165(10), 2014, 1533-1556

2) Trang, N., Determinacy in $L(\mathbb{R}, \mu)$, Journal of Mathematical Logic, 14(01), 2014, 23 pages

3) Sargsyan, G. and Trang, N., Non-tame mice from tame failures of the unique branch hypothesis, Canadian Journal of Mathematics, 66(4), 2014, 903-923

4) Trang, N., Derived models and supercompact measures on $\wp_{\omega_1}(\wp(\mathbb{R}))$, Mathematical Logic Quarterly, 61(1-2):56-65, 2015.

5) Trang, N., PFA and guessing models, Israel Journal of Mathematics, 215 (2016), 607–667, http://dx.doi.org/10.1007/s11856-016-1390-x.

6) Trang, N., Structure theory of $L(\mathbb{R}, \mu)$ and its applications, Journal of Symbolic Logic, 80(01), 2015, 29-55.

7) Sargsyan, G. and Trang, N., Tame failures of the unique branch hypothesis and models of $AD_{\mathbb{R}} + \Theta$ is regular, Journal of Mathematical Logic, 16(02), 2016, 31 pages, 10.1142/S0219061316500070, .

8) Shi, X. and Trang, N., I_0 and combinatorics at λ^+, Archive of Mathematical Logic, 2017, DOI 10.1007/s00153-016-0518-3.

9) Schlutzenberg, F. and Trang, N., Scales in hybrid mice over $\mathbb{R}$, submitted to the Annals of Pure and Applied Logic, 2016.

10) Steel, J.R. and Trang, N., Condensation for mouse pairs, submitted to the Journal of Mathematical Logic, 2023.

11) Ikegami, D. and Trang, N., On a class of maximality principles, Archive of Mathematical Logic, 57(5-6):713-725, 2018.

12) Ikegami, D. and Trang, N., On supercompactness of ω_1, Springer Proceedings in Mathematics and Statistics, 2020, on the occasion of Professor Takeuti's birthday.

13) Sargsyan, G. and Trang, N., Sealing from iterability, Transactions of the AMS Series B, 8: 229-248, 2021.

14) Chan W., Jackson S., and Trang, N., More definable combinatorics around the first and second uncountable cardinal, 2023, Journal of Mathematical Logic, doi:10.1142/S0219061322500295.

15) Trang, N., A brief account of recent developments in inner model theory, 2020, Trends in set theory, Simon Thomas 60th's birthday conference volume, Contemporary Mathematics (752).

16) Sargsyan, G. and Trang, N., Sealing of the universally Baire sets, Bulletin of Symbolic Logic, 27(3):254-266, 2021.

17) Trang, N, Divergent models with the failure of the Continuum Hypothesis, Journal of Symbolic Logic, 2023.

18) Wilson, T. and Trang, N., Determinacy from strong compactness of ω_1, Annals of Pure and Applied Logic, 176 (6), 2021.

19) Trang, N., Supercompactness can be equiconsistent with measurability, Notre Dame Journal of Formal Logic, 62(4): 593-618, 2021.

20) Chan, W., Jackson, S., and Trang N., The size of the class of countable sequences of ordinals, Transactions of the AMS, 375: 1725-1743, 2022.

21) Chan, W., Jackson, S., and Trang N., Countable length everywhere club uniformization, 2022, Journal of Symbolic Logic, 1-17. doi:10.1017/jsl.2022.78.

22) Trang, N., The AD^+ Conjecture and the Continuum Hypothesis, Proceedings of the American Mathematical Society, 151 (04): 1775-1786, 2023.

23) Chan, W., Jackson, S., and Trang N., ∞-Borel codes in natural models of AD^+, submitted to the Forum of Mathematics, Sigma, 2024.

24) Ikegami, D. and Trang, N., Preservation of AD via forcings, Israel Journal of Mathematics, 2025.

25) Trang, N., New Lower Bound Consistency Strength of Fragments of Martin's Maximum, submitted to the Transactions of the AMS, 2025.

26) Chan, W., Jackson, S., and Trang N., Size of Pieces in Decompositions into the First Uncountable Cardinal Many Pieces, to appear on the Journal of Symbolic Logic, 2025.

27) Chan, W., Jackson, S., and Trang N., Boldface GCH below the First Uncountable Limit Cardinal, submitted to the Annals of Pure and Applied Logic, 2025.

28) Steel, J.R. and Trang, N., Dodd Solidity for Mouse Pairs, submitted to the Journal of Mathematical Logic, 2025.

29) Sargsyan, G. and Trang, N., Partial Tower Sealing, submitted to the Journal of Mathematical Logic, 2025.

30) Levinson, D. and Trang, N., Derived Models in PFA, submitted to the Annals of Pure and Applied Logic, 2025.

TEACHING

- MATH 1680 - Elementary Probability and Statistics, 12 courses.
- MATH 2700 - Linear Algebra and Vector Geometry, 5 courses.
- MATH 4010 - Introduction to Metamathematics, 1 course.
- MATH 4910 - Special Problems, 1 course.
- MATH 5010 - Mathematical Logic and Set Theory, 1 course.
- MATH 5610 - Topology., 3 courses.

- MATH 5620 - Topology, 1 course.
- MATH 5900 - Special Problems, 10 courses.
- MATH 5910 - Special Problems, 1 course.
- MATH 6010 - Topics in Logic and Foundations, 1 course.
- MATH 6900 - Special Problems, 1 course.
- MATH 6910 - Special Problems, 1 course.
- MATH 6950 - Doctoral Dissertation, 2 courses.

EDITORIAL
ACTIVITIES
- Editor for the Bulletin of Mathematical Logic Reviews, 2019-2025.
- AMS Mathscinet reviewer.
- Referee for several logic and general mathematics journals.

UNIVERSITY AND
DEPARTMENTAL
SERVICES
- 2018-2019: Member of the UNT Math department's Data Science search committee.
- 2021-2022: Member of the UNT Math department's Algebra search committee.
- 2022-2023: Member of the UNT Math department's Statistics search committee.
- 2018-2023: Member of the UNT Math department's Topology qualifying exam.
- 2020-2021: Chair of the UNT Math department's Outreach committee.
- 2020-2021: Chair of the UNT Math department's Topology qualifying exam.
- 2021-2024: Organizer of the UNT Math Department's Millican Colloquium.
- 2025-2025: Member of the UNT Math Department's TFAC.

SELECTED INVITED
TALKS
1. On AD^+ and Σ_1-reflection, July 2010, 1st conference in Descriptive Inner Model Theory, Muenster, Germany.

2. The HOD analysis, July 2011, 2nd conference in Descriptive Inner Model Theory, Muenster, Germany.

3. The strength of a certain failure of the Unique Branch Hypothesis, February 2013, AMS Meeting, Mississippi.

4. Generalized Solovay Measures, August 2013, Math Colloquium, Miami University.

5. Structure Theory of $L(\mathbb{R}, \mu)$, October 2013, AMS Meeting, Louisville.

6. Universality, Self-iterability, and Definability, April 2014, MAMLS, Miami University.

7. On a Class of Guessing Models, May 2014, Young Set Theory workshop, Bedlewo, Poland.

8. The Core Model Induction and Guessing Models, June 2014, AIM and UC Berkeley workshops on Descriptive Inner Model Theory.

9. On a Class of Guessing Models, June 2014, BEST, UC Riverside.

10. Hybrid Mice, Scales, and the Core Model Induction, October 2014, Rutgers Logic Conference.

11. Uniqueness of $L(\mathbb{R}, \mu)$, June 2015, BLAST Conference, University of North Texas, Denton, Texas.

12. Squares in hod mice, July 2015, 3rd conference in Descriptive Inner Model Theory,

Muenster, Germany.

13. Large cardinals, determinacy, and forcing axioms, May 2016, ASL Annual Meeting, UConn and Aug 2016, Logic Colloquium, Leeds.

14. Compactness of ω_1, Oct 2016, Set Theory meeting at UIC.

15. Large cardinals, determinacy, and forcing axioms, *The Logic Colloquium*, Aug 2016, Leeds, UK.

16. Compactness of ω_1, *UCLA Logic Colloquium*, Jan 2017.

17. The Core Model Induction, *4th Muenster Conference on Descriptive Inner Model Theory*, July 2017, Muenster, Germany,

18. Forcings and Models of Determinacy, *The Joint Math Meeting, Logic Special Session*, Jan 2018, San Diego.

19. Forcing and Determinacy, UC Berkeley Logic Colloquium, UC Berkeley, Mar 23 2018

20. Tutorial on the Core Model Induction, Rutgers Set Theory summer school, June 2019.

21. The Exact Consistency Strength of Sealing, *The XVI International Workshop in Set Theory, CIRM*, Sep 2019, Luminy, France.

22. The Strength of Hom_∞ Sealing, UC Berkeley Logic Colloquium, March 6, 2020.

23. Descriptive Inner Model Theory, invited plenary talk, North American Meeting of the ASL, June 2021.

24. Ideals and Determinacy, invited talk, Oberwolfach Set Theory meeting, Jan 2022.

25. Forcings and Determinacy, ASL Spring meeting 2023, Irvine, March 2023.

26. Almost Disjoint Families in models of AD^+, Vienna Workshop in Set Theory, Vienna, June 2024.

27. Tutorial on the proof of the Mouse Set Conjecture, Vienna Workshop in Set Theory, Vienna, June 2024.

28. Coherent Sequences in Determinacy Models, Berkeley workshop in Inner Model Theory, 2025 and Luminy Workshop in Set Theory, 2025.

PROFESSIONAL MEMBERSHIPS

1) Full member of Sigma Xi, The Scientific Research Honor Society.

COLLABORATORS

- William Chan, University of North Texas, Denton, TX, USA
- Matt Foreman, University of California, Irvine; Irvine, CA, USA
- Daisuke Ikegami, Sun Yat-Sen University; Guangzhou, China
- Steve Jackson, University of North Texas, Denton, TX, USA
- Daniel Rodriguez, Carnegie Mellon University, USA; currently at Google, Pittsburgh

- Grigor Sargsyan, IMPAN, Gdansk, Poland
- Farmer Schlutzenberg, WWU Münster, Münster, Germany, USA
- Xianghui Shi, Beijing Normal University; Beijing, China
- John R. Steel, University of California, Berkeley; Berkeley, CA, USA
- Trevor Wilson, Miami University; Oxford, OH, USA
- Martin Zeman, University of California, Irvine; Irvine, CA, USA
- Dominik Adolf, Harbin Institute of Technology, Harbin, China
- Derek Levinson, University of North Texas, Denton, TX, USA