MATTHEW A. HARRISON-TRAINOR

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RESEARCH INTERESTS

Mathematical logic: computability theory; in particular, computable structure theory and interactions with algebra.

EDUCATION

Ph.D. in Logic and the Methodology of Science. University of California, Berkeley (in progress). Advisor: Antonio Montalbán.

B.Math in Pure Mathematics. University of Waterloo, 2012.

HONORS, AWARDS, FELLOWSHIPS, AND GRANTS

NSERC Alexander Graham Bell Canada Graduate Scholarship – Doctoral 2014. Awarded to the top Canadian Ph.D. students in the natural sciences and engineering. (Declined: Accepted NSERC Postgraduate Scholarship – Doctoral for students outside of Canada.)

NSERC Julie Payette Research Scholarship 2012. The most prestigious NSERC scholarship at the Master's level; awarded to twenty-four Masters and Ph.D. students across Canada in the natural sciences and engineering.

Berkeley Fellowship 2012. Awarded to the top 4% of applicants to doctoral programs in all fields.

Alumni Gold Medal (Faculty of Mathematics) 2012. Awarded to one graduating student in each faculty at the University of Waterloo in recognition of their academic achievements.

Jessie W.H. Zou Memorial Award for Excellence in Undergraduate Research 2012. Awarded to one ungergraduate student for excellence in research at the University of Waterloo.

Edwin Anderson National Scholarship 2008. One of sixteen national scholarships awarded to entering students in the Faculty of Mathematics at the University of Waterloo.

PUBLICATIONS

1. *Borel functors and infinitary interpretations* (with Russell Miller and Antonio Montalbán). Submitted for publication.

2. *The Gamma question for many-one degrees.* Submitted for publication.

3. *Some new computable structures of high rank* (with Gregory Igusa and Julia Knight). Submitted for publication.

4. *Scott ranks of models of a theory.* Submitted for publication.

5. *Left-orderable computable groups.* Submitted for publication.

6. *On computable field embeddings and difference closed fields* (with Alexander Melnikov and Russell Miller). Submitted for publication.

7. *Computable valued fields.* Submitted for publication.

8. *Worldizations of possibility models.* Submitted for publication.

9. *First-order possibility models and finitary completeness proofs.* Submitted for publication.

10. *Inferring probability comparisons* (with Wesley Holliday and Thomas Icard). Submitted for publication.

11. *Degrees of categoricity on a cone* (with Barbara Csima). To appear in the **Journal of Symbolic Logic**.

12. *Computable functors and effective interpretability* (with Alexander Melnikov, Russell Miller, and Antonio Montalbán). To appear in the **Journal of Symbolic Logic**.

13. *Degree spectra of relations on a cone.* To appear in the **Memoirs of the AMS**.

14. *A note on cancellation axioms for comparative probability* (with Wesley Holliday and Thomas Icard). **Theory and Decision**, 80 (2016), no. 1, 159–166..

15. *Independence in computable algebra* (with Alexander Melnikov and Antonio Montalbán). **Journal of Algebra**, 443 (2015), 441–468.

16. *Differential-algebraic jet spaces preserve internality to the constants* (with Zoé Chatzidakis and Rahim Moosa). **Journal of Symbolic Logic**, 80 (2015), no. 3, 1022–1034.

17. *Nonstandard methods for bounds in differential polynomial rings* (with Rahim Moosa and Jack Klys). **Journal of Algebra**, 360 (2012), 71–86.

Invited Talks

1. **Workshop on Computability.** Ghent, Belgium. July 2016.
   Computable structures of high Scott rank.

2. **CUNY Model Theory Seminar.** New York, NY. December 2015.
   Scott ranks of models of a theory.

3. **Kolchin Seminar in Differential Algebra.** New York, NY. December 2015.
   Differential-Algebraic Jet Spaces and Internality.

4. **Notre Dame Logic Seminar.** South Bend, IL. September 2015.
   Scott ranks of models of a theory.

5. **CSLI Workshop on Logic, Rationality, and Intelligent Interaction.** Stanford, CA. May 2015.
   First-order possibility models and worldizations.

6. **Sets and Computations.** Singapore. April 2015.
   Computable structures on a cone.

7. **AMS Spring Eastern Sectional Meeting.** Washington D.C. March 2015.
   Computable functors and effective interpretability.

8. **CMS Winter Meeting.** Hamilton, Canada. December 2014.
   Independence in computable algebra.

9. **McMaster Model Theory Seminar.** Hamilton, Canada. November 2011.
   Jet spaces are C-Moishezon.

10. **Kolchin Seminar in Differential Algebra.** New York, NY. October 2011
    Non-standard methods for bounds in differential polynomial rings.

Other Conference Talks

1. **Computability in Europe.** Paris, France. June 2016.
   Borel functors and interpretations.

2. **ASL North American Annual Meeting.** Storrs, CT. May 2016.
   Scott ranks of models of a theory.

3. **ASL North American Annual Meeting.** Urbana-Champaign, IL. March 2015.
   Computable structures relative to a cone.

4. **Logic Colloquium.** Vienna, Austria. July 2014.
   Degree spectra of relations on a cone.

5. **ASL North American Annual Meeting.** Boulder, CO. May 2014.
   Degree spectra of relations on a cone.

6. **Graduate Student Conference in Logic.** Madison, WI. April 2014.
   Degree spectra of relations on a cone.

Teaching

Graduate Student Instructor (GSI). Multivariable Calculus Fall 2015, University of California, Berkeley.

Other Activities

Referee for Mathematical Structures in Computer Science. 2016.

Member of Pure Mathematics Chair Nominating Committee. Faculty of Mathematics, University of Waterloo, 2011.

Professional Memberships

American Mathematical Society (AMS).

Association for Symbolic Logic (ASL).

Canadian Mathematical Society (CMS).