

# Erik Walsberg

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## Employment

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**University of California, Irvine**

*Visiting Assistant Professor*

*Aug 2019–Present*

**University of Illinois, Urbana-Champaign**

*J.L. Doob Research Assistant Professor*

*Aug 2016–Aug 2019*

**Hebrew University of Jerusalem**

*Postdoctoral research position supervised by Ehud Hrushovski*

*(I spent the year as a visitor at Paris VI)*

*Aug 2015–Aug 2016*

## Education

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**University of California, Los Angeles**

*PhD, mathematics*

*2010–2015*

**Arizona State University**

*BS, mathematics*

*2006–2010*

## Papers

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1. **The étale open topology and the stable fields conjecture.**  
*with W. Johnson, J. Ye, and M. Tran, accepted in JEMS.*
2. **Interpolative Fusions**  
*with A. Kruckman and M. Tran, Journal of Mathematical Logic (2021)*
3. **How to avoid a compact set**  
*with P. Hieronymi and A. Fornasiero, Advances in Mathematics (2017)*
4. **Externally definable quotients and NIP expansions of the real ordered additive group**  
*Transactions of the AMS, (2021).*
5. **A tetrachotomy for expansions of the real ordered additive group**  
*with P. Hieronymi, Selecta Mathematica, (2021).*
6. **Topological proofs of results on large fields**  
*Comptes Rendus (pending revisions).*
7. **Interpreting the monadic second order theory of one successor in expansions of the real line**  
*with P. Hieronymi, Israel J. Math. (2018)*
8. **Continuous Regular Functions**  
*with A. Block Gorman, P. Hieronymi, E. Kaplan, R. Meng, Z. Wang, Z. Xiong, and H. Yang, Logical Methods in Computer Science (2020).*

9. **Directed sets and topological spaces definable in o-minimal structures**  
with *P. A. Guerrero and M. Thomas*, *Journal of the LMS* (2021).
10. **Isometric embeddings of snowflakes into finite-dimensional Banach spaces**  
with *E. Donne and T. Rajala*, *Proceedings of the AMS* (2018)
11. **Dp-minimal valued fields**  
with *F. Jahnke and P. Simon*, *Journal of Symbolic Logic* (2017)
12. **Dp and other minimalities**  
with *Pierre Simon*, *Journal of Symbolic Logic*, accepted.
13. **Expansions of the real field by discrete subgroups of  $GL_n(\mathbb{C})$**   
with *P. Hieronymi and S. Xu*, *Proceedings of the AMS* (2021).
14. **Marker Steinhorn via definable linear orders**  
*Notre Dame Journal of Formal Logic* (2019)
15. **Tame topology over dp-minimal structures**  
with *P. Simon*, *Notre Dame Journal of Formal Logic* (2019).
16. **On the Hausdorff dimension of metric spaces definable in o-minimal expansions of the real field**  
with *J. Marikova*, *Fundamenta Mathematica*, accepted.
17. **Wild theories with o-minimal open core**  
with *P. Hieronymi and T. Nell*, *Annals of Pure and Applied Logic* (2018)
18. **Coarse dimension and definable sets in expansions of the ordered real vector space.**  
*Illinois Journal of Mathematics* (2020)
19. **A family of dp-minimal expansions of  $(\mathbb{Z}; +)$**   
with *M. Tran*, submitted.
20. **Fractals and the monadic second order theory of one successor**  
with *P. Hieronymi*, arXiv:1901.03273.
21. **An NIP structure which does not interpret an infinite group but whose Shelah expansion interprets an infinite field**  
submitted, arXiv:1910.13504
22. **Generalizing a theorem of Bés and Choffrut**  
submitted, arXiv:2002.10508
23. **Dp-minimal expansions of  $(\mathbb{Z}, +)$  via dense pairs via Mordell-Lang**  
submitted, arXiv:2004.06847.
24. **Galois groups of large fields with simple theory**  
with *A. Pillay*, arXiv:2011.10018.
25. **Notes on Trace equivalence**  
arXiv:2101.12194.
26. **Topological proofs of results on large fields**  
submitted, arXiv:2103.06868.
27. **Éz Fields**  
with *J. Ye*, submitted, arXiv:2103.06919.
28. **The étale open topology over the fraction field of a Henselian local domain I**  
with *W. Johnson and J. Ye* submitted, arXiv:2108.01868.

## Invited Talks

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<b>ASL Annual Meeting, Plenary Talk</b> <i>Seattle, Washington</i>	<i>Scheduled Jan. 2022</i>
<b>ASL Annual Meeting, Classification theory special session</b> <i>Seattle, Washington</i>	<i>Scheduled Jan. 2022</i>
<b>Online seminar on expansions of o-minimal structures</b> <i>Universidad de los Andes/University of Leeds</i>	<i>Scheduled Oct. 2021</i>
<b>Lancashire Yorkshire Model Theory Seminar</b> <i>University of Leeds/University of Manchester</i>	<i>June. 2021</i>
<b>Notre Dame Logic Seminar</b> <i>University of Notre Dame</i>	<i>Feb. 2020</i>
<b>Chulalongkorn Math Seminar</b> <i>Chulalongkorn University, Bangkok</i>	<i>Oct. 2020</i>
<b>Notre Dame Logic Seminar</b> <i>University of Notre Dame</i>	<i>Sept. 2020</i>
<b>Berkeley Logic Colloquium/Seminar</b> <i>University of California, Berkeley</i>	<i>Feb. 2020</i>
<b>UIUC Mathematics Colloquium</b> <i>University of Illinois, Urbana-Champaign</i>	<i>Jan. 2020</i>
<b>UCLA Logic Colloquium</b> <i>University of California, Los Angeles</i>	<i>Oct. 2019</i>
<b>Workshop on Tame Expansions of O-minimal Structures</b> <i>University of Konstanz, Konstanz, Germany</i>	<i>Oct. 2018</i>
<b>Ohio State University Logic Seminar</b> <i>Columbus, Ohio</i>	<i>May 2018</i>
<b>Annual ASL meeting, Model Theory Special Session</b> <i>WIU, Illinois</i>	<i>May 2018</i>
<b>McMaster University Logic Seminar</b> <i>Hamilton, Ontario</i>	<i>March 2018</i>
<b>Fields Institute Geometry and Model Theory Seminar</b> <i>Toronto, Ontario</i>	<i>March 2018</i>
<b>CMS Winter Meeting, Model Theory Special Session</b> <i>University of Waterloo, Ontario</i>	<i>Dec. 2017</i>
<b>AMS Sectional Meeting, Model Theory Special Session</b> <i>University of Indiana, Bloomington</i>	<i>April 2017</i>
<b>Midwest Model Theory Day</b> <i>University of Illinois, Chicago</i>	<i>April 2017</i>
<b>Ohio State University Logic Seminar</b> <i>Columbus, Ohio</i>	<i>Jan. 2017</i>
<b>CUNY Model Theory Seminar</b> <i>New York</i>	<i>Dec. 2016</i>
<b>UIC Logic Seminar</b>	<i>Nov. 2016</i>

*Chicago, Illinois*

<b>Workshop on Model Theory: From Fields to Hardy Fields</b> <i>Fields Institute, Toronto</i>	<i>Aug. 2016</i>
<b>University of Konstanz Model Theory Seminar</b> <i>Konstanz, Germany</i>	<i>June 2016</i>
<b>Münster Model Theory Month Conference</b> <i>University of Münster, Münster, Germany</i>	<i>May 2016</i>
<b>University of the Andes Logic Seminar</b> <i>Bogota, Columbia</i>	<i>April 2016</i>
<b>University of Illinois, Urbana-Champaign Logic Seminar</b> <i>Urbana, Illinois</i>	<i>April 2016</i>
<b>University of Jyväskylä Geometry Seminar</b> <i>Jyväskylä, Finland</i>	<i>Jan. 2016</i>
<b>Paris VI Seminar on Ordered Algebraic Structures</b>	<i>Jan. 2016</i>
<b>Paris VI, Model Theory and Group Theory Seminar</b>	<i>Dec. 2015</i>
<b>Joint Mathematics Meetings, Model Theory Special Session</b> <i>San Antonio, Texas</i>	<i>Jan. 2015</i>
<b>Western Illinois University Mathematics Colloquium</b> <i>Macomb, Illinois</i>	<i>Dec. 2014</i>
<b>University of Illinois, Chicago Logic Seminar</b>	<i>Oct. 2014</i>
<b>Ohio State University Logic Seminar</b> <i>Columbus, Ohio</i>	<i>Sept. 2014</i>
<b>University of Illinois, Urbana-Champaign Logic Seminar</b>	<i>Aug. 2014</i>
<b>ASL Annual Meeting, Model Theory Special Session</b> <i>Model theory special session, Boulder, Colorado</i>	<i>May 2014</i>
<b>Logic in Southern California Meeting</b> <i>Caltech, California</i>	<i>March 2014</i>
<b>McMaster University Logic Seminar</b> <i>Hamilton, Ontario</i>	<i>Nov. 2013</i>

## Teaching

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### UC Irvine

- Intro to Abstract Math (13, 39 students, Fall 2021)
- Lower division linear algebra (3A, two sections with 203 students in total, Fall 2021)
- Upper division linear algebra (121A, 48 students, Summer 2021)
- Lower division linear algebra (3A, 54 students, Spring 2021)
- Numerical Analysis (Math 107, 29 students, Spring 2021)
- Number Theory (Math 180A, 48 students, Winter 2021)
- Intro to abstract mathematics (Math 13, two sections with 79 students today, Fall 2020)
- Intro to abstract mathematics (Math 13, 38 students, Summer 2020)
- Lower and upper division Linear Algebra (3A and 121A, one section of each with 91 total students,

Spring 2020)

Lower division Linear Algebra (3A, two sections with 70 students total, Winter 2020)

Mathematical Logic (Math 150, 50 students, Fall 2019)

### **University of Illinois**

Graduate Model Theory (Spring 2019)

Discrete Mathematics (Math 213, 27 students, Spring 2019)

Noneuclidean Geometry (Math 402, 20 students, Fall 2018)

Mathematical Logic (Math 414, 28 students, Spring 2018)

Fundamental Mathematics (Math 347, two sections with 45 students total, Fall 2017 \*)

Fundamental Mathematics (Math 347, two sections with 54 total students, Spring 2017 \*)

Fundamental Mathematics (Math 347, 27 students, Fall 2016)

(\* indicates appearance on the 'List of teachers ranked as excellent by their students')

**University of California:** Teaching Assistant

Differential and integral calculus for life sciences, Precalculus, and linear optimization.

## **Undergraduate Research Projects**

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### **University of Illinois**

Automata and Numeration Systems, Fall 2018 and Spring 2019, 5 students

Automata and Differentiable Functions, Fall 2017 and Spring 2018, 4 students.

Both projects were done through the Illinois Geometry Lab.

The latter project resulted in the paper "Continuous Regular Functions"

## **Service**

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Referee for the following journals: International Colloquium on Automata, Languages and Programming, Annales scientifiques de l'ENS, Journal of Symbolic Logic, Annals of Pure and Applied Logic, Archive of Mathematical Logic, Illinois Journal of Mathematics.

Organized a model theory special session at the 2020 ASL meeting. Previously organized the UIUC and UCI logic seminars.