

Artem Chernikov, CV

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Research interests

Mathematical logic, more specifically model theory and its applications to algebra, geometry, combinatorics and computer science.

Career

2018– University of California, Los Angeles
Associate professor

2015–2018 University of California, Los Angeles
Assistant professor

2013–2015 Université Paris Diderot - Paris 7, Fondation Sciences Mathématiques de Paris
Postdoctoral fellow

Jan–May 2014 MSRI Berkeley
Postdoctoral fellow

2012–2013 Einstein Institute of Mathematics, Hebrew University of Jerusalem
Postdoctoral fellow (with Ehud Hrushovski)

Education

2009–2012 Université Claude Bernard - Lyon 1, ICJ
Ph.D thesis “Sur les théories sans la propriété de l’arbre du second type”, defended on 8 Oct 2012
Advisor: Itai Ben Yaacov

2007–2009 Humboldt University, Berlin, Germany
Berlin Mathematical School, Phase I student
Advisor: Andreas Baudisch

2002–2007 State University of Telecommunications, St. Petersburg, Russia
Diploma in “Information systems and technologies”, *cum laude*

Awards and grants

2017-2022 NSF CAREER Research Grant DMS-1651321 (PI)
Model Theory, Measures and Combinatorics

2016-2019 NSF Research Grant DMS-1600796 (PI)
Model-Theoretic Classification, Graph Combinatorics, and Topological Dynamics

- 2016 Sloan Research Fellowship
- 2013 Sacks prize (for the best thesis of the year in mathematical logic around the world)

Other grants

- 2019 NSF Conference grant DMS-1922826 (PI)
Model Theory of Valued Fields and Applications

Publications

Research articles and preprints

1. *Forking and dividing in NTP_2 theories*
with Itay Kaplan, J. Symbolic Logic, 77(1):1–20, 2012
2. *Externally definable sets and dependent pairs*
with Pierre Simon, Israel J. Math. 194 (2013), no. 1, 409–425
3. *Externally definable sets and dependent pairs II*
with Pierre Simon, Trans. Amer. Math. Soc. 367 (2015), 5217–5235
4. *Theories without the tree property of the second kind*
Annals of Pure and Applied Logic 165 (2014), pp. 695–723
5. *On non-forking spectra*
with Itay Kaplan and Saharon Shelah, J. Eur. Math. Soc. 18 (2016), 2821–2848
6. *An independence theorem for NTP_2 theories*
with Itai Ben Yaacov, J. Symbolic Logic, 79(1): 135–153, 2014
7. *Valued difference fields and NTP_2*
with Martin Hils, Israel Journal of Mathematics 204(1), 299–327 (2014)
8. *Groups and fields with NTP_2*
with Itay Kaplan and Pierre Simon, Proceedings of the American Mathematical Society 143(1), 395–406 (2015)
9. *External definability and groups in NIP theories*
with Anand Pillay and Pierre Simon, J. London Math. Soc., 90 (1): 213–240 (2014)
10. *On the number of Dedekind cuts and two-cardinal models of dependent theories*
with Saharon Shelah, Journal of the Institute of Mathematics of Jussieu, 15(4), 771–784 (2016)
11. *On n -dependence*
with Daniel Palacin and Kota Takeuchi, Notre Dame J. Formal Logic, Volume 60, Number 2 (2019), 195–214
12. *Definably amenable NIP groups*
with Pierre Simon, J. Amer. Math. Soc. 31 (2018), 609–641
13. *A note on the Erdős-Hajnal property for stable graphs*
with Sergei Starchenko, Proceedings of the American Mathematical Society 146.2 (2018): 785–790
14. *On model-theoretic tree properties*
with Nick Ramsey, Journal of Mathematical Logic, 16(2), (2016)

15. *Regularity lemma for distal structures*
with Sergei Starchenko, J. Eur. Math. Soc. 20 (2018), 2437-2466
16. *Henselian valued fields and inp-minimality*
with Pierre Simon, Journal of Symbolic Logic, accepted (arXiv:1601.07313)
17. *Definable regularity lemmas for NIP hypergraphs*
with Sergei Starchenko, submitted (arXiv:1607.07701)
18. *Ramsey growth in some NIP structures*
with Sergei Starchenko and Margaret Thomas, Journal of the Institute of Mathematics of Jussieu, accepted (arXiv:1609.05951)
19. *Cutting lemma and Zarankiewicz's problem in distal structures*
with David Galvin and Sergei Starchenko, submitted (arXiv:1612.00908)
20. *Mekler's construction and generalized stability*
with Nadja Hempel, Isr. J. Math. (2019) 230: 745-769
21. *A model-theoretic generalization of the Elekes-Szabó theorem*
with Sergei Starchenko, preprint (arXiv:1801.09301)
22. *Distality in valued fields and related structures*
with Matthias Aschenbrenner, Allen Gehret and Martin Ziegler, preprint
23. *Fractional Helly property and combinatorics of forking in NTP_2 theories*
in preparation

Conference proceedings

1. *Indiscernible sequences and arrays in valued fields*
RIMS Kokyuroku 1718, 127-131, 2010-10, Kyoto University

Reviews

1. *Model theory, Keisler measures and groups*
The Bulletin of Symbolic Logic, 24(3), 336-339 (2018)

Lecture notes

1. *Lecture notes on stability theory*
AMS Open Math Notes, OMN:201905.110792

Affiliations / Scholarships / Grants

1. Partnership in the project ValCoMo - Valuations, Combinatoire et Théorie des MOdèles Valuations, Combinatorics and MOdel Theory (Projet ANR blanc, Responsable : Frank Wagner, 01 janvier 2014 - 31 décembre 2017, <http://www.logique.jussieu.fr/~zoe/ValCoMo/>).
2. MALOA fellow - Marie Curie Initial Training Network in Mathematical Logic (Institut Camille Jordan, Université Claude Bernard Lyon 1, Oct 2009 - Oct 2012)
3. ECOS Nord / COLCIENCIAS fellowship - visiting Los Andes University (Bogota, Colombia), 10 Nov - 15 Dec 2010
4. MATHLOGAPS short term visiting position (Institut Camille Jordan, Université Claude Bernard Lyon 1, Feb-Jun 2008)
5. Berlin Mathematical School scholarship (supported by the German "Excellence Initiative", 2007-2009)

Conferences / Seminars / Workshops

Conference talks

1. Workshop on Recent Applications of Model Theory (Fields Institute, Toronto, Canada, Jul 2019)
2. Model theory of valued fields and applications (Münster, Germany, Jun 2019)
3. Logic Fest in the Windy City (Chicago, US, May 2019)
4. "Recent Advances in Regularity Lemmas", Special Session at the Joint Mathematics Meetings 2019 (Baltimore, US, Jan 2019)
5. Pure and Applied Model Theory (UIC, Chicago, US, Oct 2018)
6. Neostability Theory, BIRS (Oaxaca, Mexico, Oct 2018)
7. "From permutation groups to model theory" workshop (ICMS, Edinburgh, UK, Sep 2018)
8. 2018 North American Meeting of the Association for Symbolic Logic, plenary (University of Western Illinois in Macomb, Illinois, US, May 2018)
9. Workshop Model Theory and Combinatorics, Institut Henri Poincaré (Paris, France, Jan 2018)
10. "Set-theoretic and topological methods in model theory" at the Indian Statistical Institute, North-East Centre (Tezpur, India, Sep 2017)
11. "Nonstandard methods in combinatorial number theory" at the American Institute of Mathematics (San Jose, US, Aug 2017)
12. 11th Panhellenic Logic Symposium (Delphi, Greece, Jul 2017)
13. Model Theory (Bedlewo, Poland, Jul 2017)
14. Automorphism Groups, Differential Galois Theory and Model Theory (Barcelona, Spain, Jun 2017)
15. Model theory Conference, Stellenbosch University (South Africa, Jan 2017)
16. Cherlin weekend (Rutgers University, US, Oct 2016)
17. Model theory of finite and pseudofinite structures (Leeds, UK, Jul 2016)
18. International Conference on Model Theory (Notre Dame, US, Jun 2016)
19. "Model theoretic aspects of the notion of independence and dimension", 2015 RIMS Model Theory Workshop, Kyoto University (Kyoto, Japan, Dec 2015)
20. Logic Colloquium 2015, plenary speaker (Helsinki, Finland, Aug 2015)
21. "When Topological Dynamics meets Model Theory", Marseille (France, Jun 2015)
22. "Model Theory, Difference/Differential Equations and Applications" at the CIRM (Luminy, France, Apr 2015)
23. Model theory Conference South Africa, Stellenbosch (South Africa, 9 - 13 Mar 2015).
24. Classification Theory Workshop, NIMS (Daejeon, Korea, 6 - 9 Aug 2014).
25. Logic Colloquium 2013 (Evora, Portugal, Jul 2013)

26. Model theory 2013 (Ravello, Italy, Jun 2013)
27. Research workshop “Interactions between Logic, Topological structures and Banach spaces theory”, Eilat Campus of Ben Gurion University of the Negev (Israel, May 2013)
28. MALOA Final Conference “Logic and Interactions” (CIRM, Luminy, France, Apr 2013)
29. Third MALOA Training Workshop (Oxford, GB, Aug 2012)
30. “Notions of minimality and rank in dependent theories” workshop (Villa de Leyva, Colombia, Jun 2012)
31. “15th Latin American Symposium on Mathematical Logic” (Bogotá, Colombia, Jun 2012)
32. “Neostability theory” workshop (Banff International Research Station, Canada, Jan 2012)
33. “Algebra, Combinatorics and Model Theory” (Koç University, Istanbul, Turkey, Aug 2011)
34. Second MALOA Training Workshop (Leeds, GB, Jun 2011)
35. “Día de teoría de modelos” (Los Andes University, Bogota, Colombia, Nov 2010)
36. First MALOA Training Workshop (Fischbachau, Germany, Sep 2010)
37. Model Theory conference, NIMS (Seoul, South Korea, May 2010)
38. “New developments of "independence" in model theory” (Kirishima, Japan, Mar 2010)
39. “Model Theory: Around Valued Fields and Dependent Theories” workshop (Oberwolfach, Germany, Jan 2010)
40. Model theory workshop (Wroclaw, Poland, Aug 2009)
41. “Stable methods in unstable theories” workshop (Banff International Research Station, Canada, Feb 2009)
42. “Around classification theory” workshop (Leeds, GB, Jun 2008)

Seminar and Colloquium talks

1. Logic seminar, University of Turin (Turin, Italy, Jun 2019)
2. Séminaire de Logique, Université Lyon 1 (Lyon, France, Jun 2019)
3. USC Combinatorics Seminar (Los Angeles, US, Mar 2019)
4. UCLA Combinatorics Seminar (Los Angeles, US, Jan 2019)
5. Model theory seminar, UC Berkeley (US, Nov 2017)
6. Logic seminar, Caltech (Los Angeles, US, May 2016)
7. Logic seminar, UIC (Chicago, US, Apr 2016)
8. Logic Seminar, UCLA (Los Angeles, US, Nov 2015)
9. Théorie des Modèles et Groupes, Université Paris 7 (France, Jun 2015)
10. Model theory seminar, Wroclaw (Poland, May 2015)
11. Logic seminar, University of Turin (Italy, Mar 2015)
12. Geometry seminar, Université de Savoie - Chambéry (France, Mar 2015)

13. Special Mathematics Seminar, MIT (US, Jan 2015)
14. Logic seminar, University of Wisconsin-Madison (US, Jan 2015)
15. Model theory seminar, UC Berkeley (US, Jan 2015)
16. Colloquium, UCLA (Los Angeles, US, Jan 2015)
17. Colloquium, University of Wisconsin-Madison, via Skype (US, Dec 2014)
18. “Géométrie et Théorie des Modèles” at Ecole Normale Supérieure (Paris, France, Nov 2014)
19. Séminaire Arithmétique, Université Lille 1 (Lille, France, Oct 2014)
20. Model theory seminar, MSRI, Berkeley (US, May 2014)
21. Model theory seminar, CUNY Graduate Center (New York, US, May 2014)
22. Caltech–UCLA Logic Seminar (Los Angeles, US, May 2014)
23. Model theory seminar, University of California, Berkeley (US, Mar 2014)
24. Théorie des Modèles et Groupes, Université Paris 7 (France, Dec 2013)
25. Séminaire de Logique, Université Lyon 1 (France, Nov 2013)
26. “Géométrie et Théorie des Modèles” at Ecole Normale Supérieure (Paris, France, Oct 2013)
27. Set theory seminar, Hebrew University of Jerusalem (Israel, Aug 2013)
28. Model theory seminar, University of Konstanz (Germany, May 2013)
29. Logic seminar, Hebrew University of Jerusalem (Israel, Dec 2012)
30. Model theory and descriptive set theory seminar, University Lyon 1 (France, Oct 2012)
31. “Géométrie et Théorie des Modèles” at Ecole Normale Supérieure (Paris, France, Apr 2012)
32. Seminar in Logic and Set Theory, Ben-Gurion University of the Negev (Beersheba, Israel, Mar 2012)
33. Logic seminar, Hebrew University of Jerusalem (Israel, Mar 2012)
34. Logic seminar, Universität Münster (Germany, Feb 2012)
35. Séminaire général de logique (Paris, France, Jan 2012)
36. Model theory seminar + General logic seminar, Universidade de Lisboa (Portugal, Oct 2011)
37. Logic seminar at the Institut Camille Jordan (Lyon, France, Oct 2011)
38. Logic seminar, Universität Münster (Germany, Sep 2011)
39. Student seminar of the MALOA model theory semester (Lyon, France, Mar 2011)
40. Logic seminar at Universidad Nacional (Bogota, Colombia, Nov 2010)
41. Séminaire des thésards, Université Paris 7 (Paris, France, Apr 2010)
42. Logic Group seminar at the Humboldt University (Berlin, Germany, Feb 2010)
43. Logic seminar at the Institut Camille Jordan, Université Lyon 1 (Lyon, France, Nov 2009)
44. Séminaire général de logique (Paris, France, Jun 2009)
45. Logic seminar at the Institut Camille Jordan, Université Lyon 1 (Lyon, France, Mar 2009)
46. “What is...” seminar at the Freie Universität (Berlin, Germany, Jan 2009)
47. Logic Group seminar at the Humboldt University (Berlin, Germany, Jun 2008)

Research visits

1. Model theory group in Wrocław (May 2015)
2. “Model theory and applications” semester at the Max Planck Institute, Bonn (May – Jun 2012)
3. Logic group of the Hebrew University of Jerusalem (Mar – Apr 2012)
4. Logic group of the Münster University (Feb 2012)
5. Logic group of the Münster University (Sep 2011)
6. Bogotá Logic Group, Nov – Dec 2010, as a part of the ECOS-Nord exchange programme.

Teaching

See <http://www.math.ucla.edu/~chernikov/teaching.html> for the details and lecture notes.

At UCLA

1. Linear Algebra, MATH 115B, Spring 2019
2. Approximate groups and equivalence relations, MATH 285D, Winter 2018
3. Mathematical Logic and Set Theory, MATH 220A, Fall 2018
4. Model theory of groups, MATH 223M, Spring 2018
5. Mathematical Logic and Set Theory, MATH 220A, Fall 2017
6. Linear Algebra, MATH 115A, Spring 2017
7. “Finite model theory”, MATH 285D, Winter 2017
8. “Topological Dynamics and Model Theory”, participating seminar co-organized with Andrew Marks, MATH290D, Fall 2016
9. “Model theory and combinatorics”, MATH 223M, Fall 2016
10. Linear Algebra, MATH 115A, Spring 2016
11. “Topics in combinatorics”, MATH 285N, Winter 2016
12. “Introduction to stability theory”, MATH 285D, Fall 2015

Elsewhere

1. Mini-course “Model-theoretic aspects of regularity lemmas”, Institut Henri Poincaré (Paris, France, Jan-Feb 2018)
2. Mini-course “Introduction to geometric stability theory” at IMS Graduate Summer School in Logic, National University of Singapore (Jun 2017).
3. Mini-course “Abstract topological dynamics”, Nesin Mathematics Village, Sirince, Turkey (Sep 2014)
4. Exercise sessions for the course “Model theory and set theory” for master students, Université Paris 7, autumn 2013 / Cours fondamental 1 "Théorie des modèles et théorie des ensembles" (Université Paris 7, M2 LMFI, TD, automne 2013)
5. Mini-course on topics in model theory for graduate students, University Lyon 1 (October 2012)

Other service

1. Postdoc mentorship: Nicholas Ramsey (2018–), Nadja Hempel (2016–).
2. Graduate students supervision: Alex Mennen (2017–), Aaron Anderson (2018–).
3. Thesis committee: Thomas Gilton (2018), Assaf Shani (2017), Samuel Dittmer (2017), Madeline Barnicle (2017), Danny Nguyen (2016).
4. Undergraduate students supervision (independent study/REU): Jesse Han (UCLA, Winter 2015), Samuel Birns (UCLA, Summer 2016), Haebin Lim (Caltech, Winter 2017), Spencer Wyman (UCLA, Summer-Fall 2017), Aaron Anderson (Caltech, Fall 2017-2018), Jose Rosales (UCLA, Fall 2018).
5. Conference organizing:
 - (a) Special Session in Model Theory, AMS Fall 2017 Western Sectional Meeting, UC Riverside (co-organizer);
 - (b) “Set theoretic & topological methods in model theory” at the Indian Statistical Institute, Tezpur, India, Sep 2017 (scientific committee member).
6. UCLA departmental service: logic colloquium organizer (2018–), staff search committee (2018-19), math development committee (2017-18), graduate studies committee (2017-18), graduate advisors committee (2017-18), graduate admissions committee (2015-16, 2017-18).
7. Referee for: Annals of Mathematics, Duke Mathematical Journal, Advances in Mathematics, Israel Journal of Mathematics, (Oxford) Quarterly Journal of Mathematics, Journal of Mathematical Logic, Journal of Symbolic Logic, Annals of Pure and Applied Logic, Notre Dame Journal of Formal Logic, Archive for Mathematical Logic.
8. Reviewer for: MathSciNet, Zentralblatt MATH.
9. External committee work: NSF panel, the National Science Centre of Poland, NSERC Canada, ERC grants.
10. Membership: American Mathematical Society, Association for Symbolic Logic.

Languages

- Russian (native), English (fluent), French (basic), German (basic).

Contact information

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