

2023, April

**CV OF MICHAEL MEGRELISHVILI  
BAR-ILAN UNIVERSITY**

**PRESENT POSITION**

Professor, Department of Mathematics, Bar-Ilan University

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**RECENT CURRENT AND PLANNED RESEARCH**

Topological Dynamics. Topological groups. Representations of dynamical systems on Banach spaces. Transformation (semi)groups in Topology and Functional Analysis.

**RESEARCH GRANTS**

- 2019-2023 **ISF (Israel Science Foundation)** Amount: 840000 Shekel  
Title: *"Tame dynamical systems and related structures"*  
(with E. Glasner (Tel Aviv University))
- 2013-2018 **ISF (Israel Science Foundation)** Amount: 624000 Shekel  
Title: *"Representations of dynamical systems on Banach spaces"*  
(with E. Glasner (Tel Aviv University))
- 2007-2011 **BSF (USA-Israel Binational Science Foundation)** 33200 USD  
Title: *"Dynamical systems and topological properties of enveloping semigroups"*  
(with E. Glasner (Tel Aviv University) and V.V. Uspenskij (Ohio University))
- 2002-2005 **ISF (Israel Science Foundation)** Amount: 213000 Shekel  
Title: *"Representations of dynamical systems and fragmentability"*
- 1992-1996 **IMS (Israel Ministry of Sciences)** Amount: 132000 Shekel  
Title: *"Topology of  $G$ -spaces"*.  
(with E. Merzbach (Bar-Ilan University))

**RESEARCH SUPERVISION**

**Ph.D. students:**

- Matan Komisarchik (2020 - active)
- Menachem Shlossberg (2008 - 2014)
- Luie Plev (2011 - 2017)
- Eduard Kontorovich (started 2008. In 2013 he quit his Ph.D. studies. We published a joint article)
- Tzvi Scarr (1997-2002) [main supervisor Prof. Hillel Furstenberg]

**M.Sc. students:**

- Matan Komisarchik (2014 - 2016)
- Menachem Shlossberg (2005-2007)
- Eduard Kontorovich (2005-2007)
- Leonid Gugel (2005-2007)

**EDUCATION**

- 1987 Ph.D. in Mathematics  
 Thesis: *"Uniformity and topological transformation groups"*  
 Under supervision of Prof. A. Elashvili  
 (Math. Inst. of the Georgian Ac. of Sc.)  
 and Prof. Yu. M. Smirnov (Moscow State University).
- 1982-1986 Ph.D. studies, Mathematical Institute of the Georgian Academy  
 of Sciences, Dept. of Algebra and Topology.
- 1976-1981 M.Sc.,  
 Thesis: *"Homogenization of topological spaces"*  
 Under supervision of Prof. A. Elashvili  
 Mathematics and Mechanics Department, Tbilisi State University.

**ACADEMIC POSITIONS**

- 2003-present Associate Professor, Bar-Ilan University, KAMEA researcher  
 (Israeli State program for absorption of immigrant scientists)
- 1999-2002 Senior researcher and lecturer (Bar-Ilan University)
- 1991-1999 Researcher and Lecturer (Bar-Ilan University)
- 1985-1991 Senior Researcher (Mathem. Inst., Georgian Ac. of Sciences, Tbilisi)

**Member of the editorial board**

Topological Algebra and its applications (online journal), DE GRUYTER

**REFEREEING FOR JOURNALS:**

Topology and Applications, Israel J. of Math., Proc. AMS, Mathematische Annalen,  
 Semigroup Forum, L'Enseignement Mathématique, Topology Proceedings, Georgian  
 Math. Journal, Russian Math. Notes, Pure and Applied Algebra, J. Math. Soc.  
 Japan.

**TEACHING EXPERIENCE:**

- Bar-Ilan University 1992–present

- Holon Institute of Technology 2016 - 2019
- Ashkelon College 1997–2008
- Ariel College 1996–2003
- The College of Management, Rishon-Lezion 1995–1997
- Tbilisi Mathematical Institute 1985-1990
- Tbilisi State University 1983-1984

## COURSES TAUGHT

Topology

Group Theory

Linear Algebra

Calculus 1, 2

Abstract Algebra 1

Ring Theory

Algebraic Structures

Set Theory

Discrete Mathematics

Seminars: *Dynamical Systems, Pontryagin duality, Topological groups, Topology and Functional Analysis*

## PERSONAL DATA

Born 28/11/1959, in Georgia Republic (former USSR). Israeli citizen since 1991.

Married. Two children, two grandchildren.

Home address: Heil-Hatzanhanim st. 17, app. 16, Rishon-Lezion, 7570275 Israel,

Tel.: 054-7845344 (mobile), 03-5318864 (Bar-Ilan Un.), Office No. 119, Dep. of Math.

## Selected conference and seminar talks

- (1) Georgian Mathematical Union XII Annual International Conference, 29 August - 03 September 2022, Batumi, Georgia. Title: Orderable groups and semigroup compactifications.
- (2) Toposym 2022, Prague Symposia on General Topology and its Relations to Modern Analysis and Algebra, July 25–29, 2022, Prague, Czech Republic. Title: Orderable groups and semigroup compactifications.
- (3) 36th Summer Topology Conference, July 18-22, 2022. University of Vienna, Austria. Title: Topological group actions by group automorphisms and Banach representations.
- (4) St. Petersburg Dep. of Steklov Mathematical Institute of Russian Academy of Sciences, Russia, August, 2019. Title: *Group actions on treelike compact spaces* (contributed talk)
- (5) Interdisciplinary Colloquium in Topology and its Applications, Vigo, Spain, June, 2019. Title: *Group actions on treelike structures* (contributed talk)
- (6) Dynamical Methods in Algebra, Geometry and Topology, 4–6t July 2018, Udine, Italy. Title: *Generalized amenability of topological groups and Banach representations* (invited talk)
- (7) Structure and dynamics of Polish groups conference, Lausanne, Switzerland, 19 – 23 March 2018. Title: *Generalized (extremal) amenability of topological groups and circular orders* (invited talk)
- (8) The International Conference in Functional Analysis dedicated to the 125th anniversary of Stefan Banach, Lviv, Ukraine, 18–23 September, 2017. Title: *Banach representations of topological groups and dynamical systems* (plenary talk)
- (9) Banach Algebras and Applications, 03-11 July, 2017, Oulu, Finland. Title: *Tame functions on topological groups and (generalized) extreme amenability* (invited talk).
- (10) Analysis Seminar, Bar-Ilan University, January 2017, Title: *Tame dynamical systems*
- (11) The Sixth Visegrad Conference Dynamical Systems, Prague, Czech Republic, July 2015. Title: *Tame functions and symbolic dynamical systems* (contributed talk)
- (12) When Topological Dynamics Meets Model Theory, Marseille, France, June 29–July 3, 2015. Title: *Order, tame systems and topological groups* (invited talk)
- (13) Descriptive Set Theory In Paris, December 2014. Title: Eventual nonsensitivity, tameness and topological groups (invited talk)
- (14) Minicourse: Banach representations of dynamical systems, Warsaw, Math. Inst. of Polish Ac. of Sciences, April 7–11, 2014. Video material and lecture notes are available at <https://u.math.biu.ac.il/~megere/seminar.html>.
- (15) IX Iberoamerican Conference on Topology and its Applications, June, 2014, Almeria, Spain. Title: *Topological groups, order preserving actions and Rosenthal Banach spaces* (invited talk)

- (16) Interactions between Logic, Topological structures and Banach spaces theory, Eilat, May 2013  
(contributed talk) title: Enveloping semigroups of Rosenthal Banach spaces (contributed talk)
- (17) Workshop on set theoretic methods in compact spaces and Banach spaces, Warsaw, April 2013  
(contributed talk) title: Enveloping semigroups of Rosenthal Banach spaces.
- (18) Measurable and Topological dynamics and related topics, Huangshan, China, June 2011 (invited talk) title: On fixed point theorems and nonsensitivity
- (19) Summer Conference on General Topology and its Applications, CUNY, New York, July 2011  
(contributed talk) title: On fixed point theorems and nonsensitivity of dynamical systems
- (20) II International Conference of Georgian Mathematical Union, Batumi, September, 2011  
(contributed talk) title: On Fixed Point Theorems and Nonsensitivity of Dynamical Systems
- (21) Algebra meets Topology, Barcelona July, 2010  
(Keynote Speaker) title: Minimality properties in topological groups
- (22) 22nd Summer conference on topology and its applications, Universidad Jaume I de Castellon, July, 2007  
(invited talk) title: Fragmentability in topology and dynamics
- (23) International Conference on Topology and its Applications June 2006, Aegion, Greece  
(contributed talk) title: Every topological group is a group retract of a minimal group
- (24) Summer Conference on Topology and its Applications, July 2006 Statesboro, GA, USA  
(invited talk) title: Compactifications of Semigroups and Semigroup Actions
- (25) Workshop on the Urysohn space, May 2006, Beer-Sheva  
(contributed talk) title: Globalization of Partial Actions on Topological and Metric Spaces
- (26) Workshop on Ergodic Theory and Dynamical Systems, Szklarska-Poreba, Poland, June 2006  
(contributed talk) title: Reflexively but not Hilbert representable compact flows
- (27) The Visegrad Conference, Dynamical Systems, Prague July 2005  
(contributed talk) title: Hereditarily non-sensitive dynamical systems
- (28) International Workshop in Topological Groups: Pamplona, August 2005  
(keynote speaker) title: Some new algebras of functions on topological groups
- (29) Canadian Mathematical Society, CMS/CAIMS Summer 2004 Meeting, Dalhousie University, Halifax  
(contributed talk) title: Relatively minimal subgroups.
- (30) IMU Functional Analysis Meeting, Yaki Sternfeld Memorial Conference, Technion, May 2002  
(contributed talk) title: Reflexively and unitarily representable topological groups.

- (31) "Summer" Conference on Topology and Applications, July 1-4, Auckland, New Zealand  
(invited talk) title: Group actions on duals of Asplund spaces
- (32) Ninth Prague Topological Symposium, August 2001, Prague, Czech Republic  
(invited talk) title: Fragmentability and representations of flows

## PUBLICATIONS

## REFERENCES

- (66) M. Megrelishvili and M. Komisarchik, *Tameness and Rosenthal type locally convex spaces*. Revista de la Real Academia de Ciencias Exactas (accepted). ArXiv:2203.02368.
- (65) M. Megrelishvili, *Maximal equivariant compactifications*, 2022, arXiv:2201.13426, Topology and Appl. (to appear).
- (64) M. Megrelishvili, *Topological group actions by group automorphisms and Banach representations*, Forum Mathem. (accepted) ArXiv:2110.01386.
- (63) M. Megrelishvili, *Orderable groups and semigroup compactifications*, 2022, arXiv:2112.14615, Monatsch. Math. (to appear), DOI 10.1007/s00605-022-01787-x.
- (62) M. Megrelishvili and M. Shlossberg, *Minimality properties of some topological matrix groups*, ArXiv:1912.12088, Topology and Appl. v. 322, 2023.
- (61) E. Glasner and M. Megrelishvili, *Todorcevic' Trichotomy and a hierarchy in the class of tame dynamical systems*, arXiv:2011.04376, Transactions of the Amer. Math. Soc. 375 (2022), 4513–4548.
- (60) T. Ibarlucia and M. Megrelishvili, *Maximal equivariant compactification of the Urysohn spaces and other metric structures*, Advances in Math. v. 380, 2021, 107599.
- (59) E. Glasner and M. Megrelishvili, *Circular orders, ultrahomogeneity and topological groups*, ArXiv:1803.06583. AMS Contemporary Mathematics book series volume "Topology, Geometry, and Dynamics: Rokhlin - 100", Contemp. Math. **77**, 133—154 (2021).
- (58) M. Megrelishvili, *Median pretrees and functions of bounded variation*, Topology and Applications 285 (2020).
- (57) E. Glasner and M. Megrelishvili, *Group actions on treelike compact spaces*, Science China Math. 62 (2019).
- (56) M. Megrelishvili, *Tame functionals on Banach algebras*, in: Banach algebras and Applications, Editor in Chief M. Mustermann und M. Maier, Volume 5/31, De Gruyeter, 2019.
- (55) E. Glasner and M. Megrelishvili, *More on tame dynamical systems*, in: Lecture Notes Math. vol. 2013, Ergodic Theory and Dynamical Systems in their Interactions with Arithmetics and Combinatorics, Eds.: S. Ferenczi, J. Kulaga-Przymus, M. Lemanczyk, Springer, 2018, pp. 351–392.
- (54) E. Glasner and M. Megrelishvili, *Circularly ordered dynamical systems*, Monatshefte für Mathematik, 185 (2018), 415–441.
- (53) M. Megrelishvili, *A note about topological group  $c_0$* , Axioms-372065, 2018.
- (52) M. Megrelishvili, L. Plev and M. Shlossberg, *Minimality of the semidirect products*, Topology Proceedings, 49 (2017), 199–214.
- (51) M. Megrelishvili, *A note on tameness of families having bounded variation*, Topology and Applications, 217 (2017), 20–30.
- (50) E. Glasner and M. Megrelishvili, *Eventual nonsensitivity and tame dynamical systems*, 2016, Preprint. ArXiv: 1405.2588.

- (49) M. Megrelishvili and M. Shlossberg, *Non-archimedean transportation problems and Kantorovich ultra-norms*, Arxiv: 1504.06301. *P-Adic Numbers, Ultrametric Analysis, and Applications*, **8** (2016), 125–148.
- (48) M. Megrelishvili and L. Polev, *Order and minimality of some topological groups*. Arxiv: 1501.03410. *Topology and Appl.* **201** (2016), 131–144.
- (47) E. Glasner and M. Megrelishvili, *Representations of dynamical systems on Banach spaces*. In: *Recent Progress in General Topology III*, Springer, Atlantis Press, 2014.  
<http://www.springer.com/mathematics/geometry/book/978-94-6239-023-2>
- (46) D. Dikranjan and M. Megrelishvili, *Minimality properties in topological groups*. In: *Recent Progress in General Topology III*, Springer, Atlantis Press, 2014.  
<http://www.springer.com/mathematics/geometry/book/978-94-6239-023-2>
- (45) M. Megrelishvili and M. Shlossberg, *Free non-archimedean topological groups*, *Comm. Math. Univ. Carolinae* 54:2, 2013, 273–312.
- (44) E. Glasner and M. Megrelishvili, *Banach representations and affine compactifications of dynamical systems*. *Asymptotic Geometric Analysis. Proceedings of the Fall 2010 Fields Institute Thematic Program*. (Monika Ludwig, Vitali Milman, Vladimir Pestov, Nicole Tomczak-Jaegermann, editors), Fields Institute Proceedings, Springer-Verlag, 2013.
- (43) E. Glasner and M. Megrelishvili, *Representations of dynamical systems on Banach spaces not containing  $l_1$* , *Transactions of the Amer. Math. Soc.* **364** (2012), 6395–6424.
- (42) E. Glasner and M. Megrelishvili, *On fixed point theorems and nonsensitivity*, *Israel Journal of Math.* **190** (2012), 289–305.
- (41) M. Megrelishvili and M. Shlossberg, *Notes on non-archimedean topological groups*, *Comm. Math. Univ. Carol.* **159** (2012), 2497–2505.
- (40) D. Dikranjan and M. Megrelishvili, *Relative minimality and co-minimality of subgroups in topological groups*, *Topology and Appl.* **157** (2010), 62–76.
- (39) L. Google and M. Megrelishvili, *Semigroup actions: proximities, compactifications and normality*, *Topology Proc.*, **35** (2010) 37–71.
- (38) E. Glasner, M. Megrelishvili and V.V. Uspenskij, *On metrizable enveloping semigroups*, *Israel Journal of Math.*, **164** (2008), 317–332.
- (37) E. Kontorovich and M. Megrelishvili, *A note on sensitivity of semigroup actions*, *Semigroup Forum*, **76** (2008), no. 1, 113–141.
- (36) M. Megrelishvili, *Reflexively but not Hilbert representable compact flows and semitopological semigroups*, *Colloquium Math.*, **110** (2008), no. 2, 383–407.
- (35) M. Megrelishvili, *Every topological group is a group retract of a minimal group*, *Topology and Appl.*, **155** (2008), 2105–2127.
- (34) E. Glasner and M. Megrelishvili, *New algebras of functions on topological groups arising from actions*, *Fundamenta Math.*, **201** (2008), 1–51.
- (33) M. Megrelishvili, *Topological transformation groups: selected topics*. Survey paper in: *Open Problems in Topology II* (Elliott Pearl, editor), Elsevier Science, 2007, pp. 423–438.
- (32) M. Megrelishvili, *Compactifications of Semigroups and Semigroup Actions*, *Topology Proc.*, **31**, no 2 (2007) pp. 611–650.
- (31) E. Glasner and M. Megrelishvili, *Linear representations of hereditarily non-sensitive dynamical systems*, *Colloquium Math.*, **104** (2006), no.2, 223–283.

- (30) M. Megrelishvili and L. Schroder, *Globalization of Confluent Partial Actions on Topological and Metric Spaces*, *Topology and Appl.*, **145** (2004), 119–145.
- (29) M. Megrelishvili, *Generalized Heisenberg groups and Shtern's question*, *Georgian Mathematical Journal*, **11** (2004), number 4, 775–782.
- (28) M. Megrelishvili, *Fragmentability and representations of flows*, *Topology Proc.*, **27:2** (2003), 497–544.
- (27) M. Megrelishvili, *Reflexively but not unitarily representable topological groups*, *Topology Proc.*, **25** (2002), 615–625.
- (26) M. Megrelishvili, *Every semitopological semigroup compactification of the group  $H_+[0, 1]$  is trivial*, *Semigroup Forum*, **63:3** (2001), 357–370. AMS MR 2002g: 54039.
- (25) M. Megrelishvili, V. Pestov and V. Uspenskij, *A Note on the precompactness of weakly almost periodic groups*, In: "Nuclear groups and Lie groups", *Research and Exposition in Math. series*, vol. 24, Heldermann Verlag, 2001, 209–216. E-print: <http://front.math.ucdavis.edu/math.GN/0011152>. MR 2002g: 22007.
- (24) M. Megrelishvili, *Operator topologies and reflexive representability*, In: "Nuclear groups and Lie groups", *Research and Exposition in Math. series*, **24**, Heldermann Verlag, 2001, 197–208. MR 2002m:46027.
- (23) M. Megrelishvili and T. Scarr, *The equivariant universality and couniversality of the Cantor cube*, *Fundamenta Math.* **167** (2001), 269–275. MR 2002b: 54039.
- (22) M. Megrelishvili, *Groupoid preactions by partial homeomorphisms and homogenizations*, In: *Categorical Methods in Algebra and Topology*, *CatMAT 2000*, *Mathematik-Arbeitspapiere* **54** (ed.: H. Herrlich and H. Porst), 2000, 279–292.
- (21) M. Megrelishvili, *G-Minimal Topological Groups*, In: *Abelian Groups, Module Theory and Topology*, *Lecture Notes in Pure and Applied Algebra*, Marcel Dekker, **201** (1998), 289–300. MR 99j: 22002.
- (20) M. Megrelishvili and T. Scarr, *Constructing Tychonoff G-Spaces Which Are Not G-Tychonoff*, *Topology and its Applications*, **86** (1998), 69–81. MR 99g: 54034.
- (19) M. Megrelishvili, *Fragmentability and continuity of semigroup actions*, *Semigroup Forum*, **57** (1998), 101–126. MR 99c: 54053.
- (18) M. Megrelishvili, *Eberlein groups and compact semitopological semigroups*, preprint, Bar-Ilan University, 1998.
- (17) M. Megrelishvili, P. Nickolas and V. Pestov, *Uniformities And Uniformly Continuous Functions On Locally Connected Groups*, *Bull. Austral. Math. Society*, **56** (1997), 279–283. MR 99e: 22005.
- (16) M. Megrelishvili, *Minimal Non-Totally Minimal Topological Rings*, *Rendiconti del Seminario Matematico della Universita di Padova*, **97** (1997), 73–79. MR 98k: 16063.
- (15) M. Megrelishvili, *Free Topological G-Groups Over Semigroup Actions*, *Annals of the New York Academy of Sciences*, **788** (1996), 164–170. MR 98g: 54094.
- (14) M. Megrelishvili, *Free Topological G-Groups*, *New Zealand Journal of Math.*, **25** (1996), 59–72. MR 97f: 54047.
- (13) M. Megrelishvili, *Group representations and construction of minimal topological groups*, *Topology Appl.*, **62** (1995), 1–19. MR 96b: 22001.
- (12) M. Megrelishvili, *Equivariant Completions*, *Comment. Math. Univ. Carolinae*, vol. **35:3** (1994), 539–547. MR 95i: 54045.

**BEFORE THE ALIYA**

- (11) M. Megrelishvili, *Linear representations and construction of minimal topological groups*, Inst. Ac. Sc. Georgian SSR, Tbilisi, 1991, 27 pp.
- (10) M. Megrelishvili, *Compactification and factorization in the category of  $G$ -spaces*, in: *Categorical Topology*, ed. J. Adamek and S. MacLane, World Scientific, Singapore, 1989, 220–237. MR 92c: 54031
- (9) M. Megrelishvili, *A Tychonoff  $G$ -space not admitting a compact Hausdorff  $G$ -extension or a  $G$ -linearization*, *Russian Math. Surveys* **43:2** (1988), 177–178. MR 89e: 54080.
- (8) M. Megrelishvili, *Quasibounded uniform  $G$ -spaces*, Inst. Ac. Sc. Georgian SSR, (GNIINTI, No. 331-G87), Tbilisi, 1987, 37 pp.
- (7) M. Megrelishvili, *Uniformity and Topological Transformation Groups*, Ph.D. Dissertation, Tbilisi State University, 1986, 125 pp.
- (6) M. Megrelishvili, *Embedding of topological spaces in spaces with strong properties of homogeneity*, *Bull. Ac. Sc. Georgian SSR*, **121:2** (1986), 257–260. MR 87m: 54110.
- (5) M. Megrelishvili, *Classes of uniform  $G$ -spaces*, in: *Mappings and Extensions of Topological Spaces*, Udmurt. State University, Izhevsk, 1985, 12–19.
- (4) M. Megrelishvili, *Equivariant completions and compact extensions*, *Bull. Ac. Sc. Georgian SSR*, **115:4** (1984), 21–24. MR 86m: 54054.
- (3) M. Megrelishvili, *A Factorization theorem and universal compactifications of  $G$ -spaces*, *Russian Math. Surveys*, **38:6** (1983), 117–118. MR 85h: 54072.
- (2) M. Megrelishvili, *Equivariant normality*, *Bull. Ac. Sc. Georgian SSR*, **111: 1** (1983), 43–46. MR 85g: 54039.
- (1) M. Megrelishvili, *Topological spaces with isomorphic free homogeneous spaces*, *Bull. Ac. Sc. Georgian SSR*, **103:3** (1981), 549–552. MR 83f: 54031.