



Zalán Gyenis

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EDUCATION

- 2011 **Rutgers University, New Jersey, USA**
Visiting graduate student
- 2008 – 2013 **Central European University, Budapest, Hungary**
Ph.D. in Mathematics, summa cum laude (specialization: Mathematical Logic)
Title: Finite categoricity and Non-atomicity of free algebras
Supervisor: Prof. Gábor Sági
- 2003 – 2008 **Eötvös Loránd University, Budapest, Hungary**
M.Sc. in Pure Mathematics (specialization: Mathematical Logic and Set theory)

EMPLOYMENT HISTORY

- 2015 – present **Postdoctoral Fellow** at Department of Algebra, Budapest University of Technology and Economics
- 2013 – 2015 **MTA Postdoctoral Fellow** at Rényi Institute of Mathematics, Hungarian Academy of Sciences
- 2012 – 2013 **Assistant Professor** at Department of Natural Sciences, National University of Public Service, Hungary
- 2007 – 2013 **TA Contracts** with Eötvös University and Budapest University of Technology and Economics

FURTHER EDUCATION (SUMMER AND WINTER SCHOOLS)

- 2011 **Set Theory and Higher Order Logic**, Birkbeck College, University of London, London
- 2010 **Young Set Theory Workshop**, Kurt Gödel Research Center, Vienna (Raach)
- 2008 **Probabilistic Causality**, Central European University, Budapest

AWARDS, GRANTS

- 2016 EPSA Fellow at Centre for Philosophy of Natural and Social Science, LSE, London, July
- 2015 – 2019 Hungarian Scientific Research Grant (OTKA, member) No. 115593
"A formal approach to the metaphysical foundations of physics"
- 2015 – 2019 Hungarian Scientific Research Grant (OTKA, member) No. 113047
"Sets, spaces, and functions"
- 2013 – 2017 Budapest-Krakow Research Group on Probability, causality and determinism (member),
Bilateral project between the Hungarian and Polish Academy of Science
- 2011 – 2015 Hungarian Scientific Research Grant (OTKA, member) No. 83726 "Set-theoretic topology"
- 2011 Excellent Instructor of the Department, Budapest University of Technology and Economics
- 2011 Advanced Doctoral Student Award, Central European University
- 2011 Doctoral Research Support Grant, Central European University
- 2009 Hungarian National Students' Research Competition (OTDK), Section of Mathematics, 1st prize
- 2007 Students' Research Competition (TDK), Section of Mathematics, 1st prize

RESEARCH INTEREST

Logic (model theory, algebraic logic, set theory)
Interpretational problems of probability; Probabilistic causality; Formal epistemology, especially Bayesianism

SUPERVISION

- 2015 – present **William Brown**, PhD student, Department of Logic, Faculty of Humanities, Eötvös Loránd University
In progress, topic: Modal logic and Bayesian learning theory
- 2014 – 2015 **William Brown**, Masters Thesis, Department of Logic, Faculty of Humanities, Eötvös Loránd University
Title: Completeness results for normal modal logics

LANGUAGES

Hungarian (native), English (fluent), French (reading: good, speaking, writing: poor)

OTHER PROFESSIONAL ACTIVITIES

Refereeing for: Mathematical Logic Quarterly, Archive for Mathematical Logic, Bulletin of Symbolic Logic, Logic Journal of the IGPL, The British Journal for the Philosophy of Science, Philosophy of Science, Bolyai Society Mathematical Studies

CONFERENCES, TALKS

- Entia et Nomina, Warszawa, 6–9 Sept 2016, *invited speaker for 3 talks (tutorial); General properties of Bayesian learning as statistical inference determined by conditional expectation*
- Sixth workshop of the Budapest-Krakow Research Group on Probability, causality and determinism, Krakow, 2016; *The modal logic behind Bayesian learning*
- Fifth workshop of the Budapest-Krakow Research Group on Probability, causality and determinism, Krakow, 2014; *Having a look at what a Bayesian Agent cannot see* (joint with Miklós Rédei)
- Theoretical Philosophy Forum, Budapest, 2016; *Having a look at what a Bayesian Agent cannot see (Bayes Blind Spot)* (joint with Miklós Rédei)
- Institutional seminar of MTA Institute of Philosophy, 2016; *Properties of Bayesian learning based on conditional expectation as a conditioning device* (joint with Miklós Rédei)
- "A tudomány ünnepe", BME, 2015; *Gödel nem-teljességi tételei az elsőrendű logika töredékeire*
- EPSA Düsseldorf, 2015; *The Borel–Kolmogorov Paradox and conditional expectations* (joint with Miklós Rédei)
- Young researchers seminar (FIKUSZ), MTA Rényi Institute, 2015; *Reducts of countable homogeneous structures*
- Second workshop of the Budapest-Krakow Research Group on Probability, causality and determinism, Krakow, 2014
- PSA2014, symposium talk, Chicago, 2014; *Measure Theoretic Analysis of Consistency of the Principal Principle* (joint with Miklós Rédei)
- First workshop of the Budapest-Krakow Research Group, Budapest, 2014; *Can a Bayesian agent always be rational?* (joint with Miklós Rédei)
- ECAP8, Bucharest, 2014; *Can a Bayesian agent always be rational?* (joint with Miklós Rédei)
- Theoretical Philosophy Forum, Budapest, 2014; *Can a Bayesian agent always be rational?* (joint with Miklós Rédei)
- EPSA2013, Helsinki, 2013; *Measure theoretic analysis of Bertrand's paradox* (joint with Miklós Rédei)
- Choice Group Workshop, London, 2013; *A principled analysis of consistency of the Principal Principle* (joint with Miklós Rédei)
- First International Conference on Logic and Relativity: honoring István Németi's 70th birthday, 2012; *On generic automorphisms*
- Infinite and Finite sets, Budapest, 2011;
- Theoretical Philosophy Forum, Budapest, 2010; *Characterizing common cause closed probability spaces* (joint with Miklós Rédei)
- Causes and Tenses: Formal Perspectives, Krakow, 2010; *Characterizing common cause closed probability spaces* (joint with Miklós Rédei)
- Logic Colloquium, Paris, 2010; *Morley's Theorem in the Finite*.
- Theoretical Philosophy Forum, Budapest, 2009; *On Humeian Laws of Nature* (joint with Balázs Gyenis).

List of publications

Nov 2016

Refereed papers

INDEPENDENT CITATIONS: 26; CUMULATIVE IMPACT FACTOR: 5.3; H-INDEX: 4

1. H. Andréka, Z. Gyenis, I. Németi. **Ultraproducts of continuous posets**, Algebra Universalis, Accepted for publication, Published online, DOI 10.1007/s00012-016-0401-4; 2016.
2. Z. Gyenis, G. Hofer-Szabó, M. Rédei. **Conditioning using conditional expectations: the Borel–Kolmogorov paradox**, Synthese, Forthcoming, DOI 10.1007/s11229-016-1070-8, 2016.
Citations: 1
3. Z. Gyenis, M. Rédei. **Measure theoretic analysis of consistency of the Principal Principle**, Philosophy of Science, Accepted, 2016.
Citations: 1
4. Z. Gyenis, M. Rédei. **Defusing Bertrand's paradox**, The British Journal for the Philosophy of Science 66(2), 349–373, 2015.
Citations: 2
5. Z. Gyenis. **Interpolation property and homogeneous structures**, Logic Journal of IGPL, 22(4) pp. 597–607. (2014)
Citations: 1
6. Z. Gyenis, M. Rédei. **Atomicity and causal completeness**, Erkenntnis, 79(3) pp. 436–451. (2014)
Citations: 4

7. G. Sági, Z. Gyenis. **Upward Morley's theorem downward**, *Mathematical Logic Quarterly* 59(4–5) pp. 303–331. (2013)
Citations: 2
8. Z. Gyenis, M. Rédei. **Why Bertrand's paradox is not paradoxical but is felt so**, in *Recent Developments in the Philosophy of Science: EPSA13 Helsinki*, U. Maki, S. Rupy, G. Schurz, I. Votsis, (eds.) Springer, pp. 265–276, (2015)
9. Z. Gyenis, M. Rédei. **Characterizing common cause closed probability spaces**, *Philosophy of Science*, 78(3) pp. 393–409. (2011)
Citations: 10
10. Z. Gyenis. **On atomicity of free algebras of certain cylindric-like varieties**, *Logic Journal of IGPL* 19(1), pp. 44–52. (2011)
Citations: 5
11. L. E. Szabó, B. Gyenis, Z. Gyenis, M. Rédei, G. Hofer-Szabó. **Korrelációk kauzális magyarázata**, (in Hungarian) *Magyar Filozófiai Szemle*, 2010:3.

Submitted for publication

1. Z. Gyenis, M. Rédei. **Categorical subsystem independence as morphism co-possibility**, Submitted for publication, 2016.
2. Z. Gyenis, M. Rédei. **A principled analysis of consistency of an Abstract Principal Principle**, Submitted for publication, 2016.
3. Z. Gyenis, M. Rédei. **The Bayes Blind Spot of a finite Bayesian Agent is a large set**, Submitted for publication, available from <http://philsci-archive.pitt.edu/12326/>, 2016.
4. Z. Gyenis, M. Rédei. **General properties of general Bayesian learning**, Submitted for publication, available from <http://philsci-archive.pitt.edu/11632/>, 2015.

Manuscripts in progress

1. Z. Gyenis, M. Rédei, W. Brown. **The modal logic of Bayes accessibility**, Ready to be submitted, 2016.
2. Z. Gyenis, M. Rédei, W. Brown. **What the unimodal logic of probabilistic belief revision can be?**, In preparation, manuscript available upon request, 2016.
3. Z. Gyenis, M. Rédei. **Can Bayesian agents always be rational? A principled analysis of consistency of an Abstract Principal Principle**, available from <http://philsci-archive.pitt.edu/10085/>, 2014.
4. Z. Gyenis, M. Rédei. **On dense extension of certain general probability spaces**, Unpublished manuscript, available upon request, 2012.
5. Z. Gyenis, L. Csirmaz. **Problems and solutions in Mathematical Logic**, Unfinished book, in preparation.
6. Z. Gyenis, R. Horváth, G. Sági. **On the number of reducts of homogeneous structures**, Unpublished manuscript, available upon request.

Teaching experience

(complete list of courses taught with short descriptions)

Eötvös Loránd University, Department of Logic			
Date	Course name	Level	Description
2016	Advanced Model Theory (in English)	PhD	Lecture notes: https://goo.gl/3kU3qy For PhD students in the Logic program of the Department. Topics include: Types, saturation, compactness; Omitting types theorems; Small theories, atomic and prime models; Categoricity, stability; Indiscernibles, unstable theories; Shelah's classification; Random graph, algebraic closure, strongly minimal structures
2016 2015	Universal algebra (in English)	PhD	This was a two-semester course for PhD students in the Logic program. We covered Chapters I, II and most of IV and V from Burris–Sankappanavar: Universal algebra (Millenium Edition)
2015	Computability theory (in English)	PhD	For PhD students in the Logic program. Topics: finite automata, Turing machines, recursive functions, equivalence theorems, universality, halting problem, Church-Turing thesis, outlook to non-classical models of computation (oracles, etc).
2014	Classics of modern logic (in English)	PhD MA	Course for masters and PhD students in Philosophy. The aim of the course was to process some classical papers of logic, such as Tarski: Theory of truth, What are logical notions; and Zermelo: On boundary numbers and domains of sets.
2014	Model Theory (in English)	MA	Lecture notes: https://goo.gl/5Fb70t For PhD students in the Logic program. Topics include: Basic notions, Löwenheim–Skolem theorems; Back and forth method, quantifier elimination; Fraïssé-limits; Ultrafilters and applications (Erdős–DeBruijn theorem, Compactness, Arrow's theorem); Ultraproducts, axiomatizability, definability; Non-standard models of PA
2007	Model theory (in Hungarian)	MA	Course for Logic MA students. Topics include: classical theorems of first order logic: Compactness, Completeness, Löwenheim–Skolem theorems; Ultraproducts, saturation, homogeneity, back-and-forth methods, description of \aleph_0 -categoricity, etc. Lecture notes: https://goo.gl/8gPosQ

Technical University Budapest, Department of Algebra			
Date	Course name	Level	Description
2016	Advanced Linear Algebra	MSc	A course for electrical engineers. Topics: Linear operators, equations, matrices; Various subspaces related to matrices; Eigen-decomposition, PLU-, QR-, BR- and Jordan-decomposition; Diagonalization, Schur-decomposition; Positive matrices, Perron-Frobenius theorems.
2016 2015	Mathematics A3	BSc	Basic calculus for engineers (differential equations, complex function theory, vector analysis, Stokes, Gauss–Ostrogradsky theorems)
2016 2015	Mathematics A2	BSc	Basic calculus for engineers (Convergence of series and sums; Basic integral theory)
2016	Mathematics A1	BSc	Basic calculus for engineers (Limits of sequences and functions; differentiation)

Eötvös Loránd University, Institute of Mathematics, Department of Computer Science			
Date	Course name	Level	Description
2009 2010 2011 2012 2013 2014	Foundations of Mathematics	BSc	Foundational course for Mathematics BSc students. Topics: Predicate calculus, First order logic, classical theorems: Compactness, Completeness, Löwenheim–Skolem theorems; Introductory set theory, basics of cardinal arithmetic, Zorn's lemma; Gödel's incompleteness theorems
2008	Discrete mathematics	BSc	Introductory course for Mathematics BSc students around combinatorics, graph theory and algorithms.

Technical University Budapest, Department of Computer Science			
Date	Course name	Level	Description
2008 2009 2010 2011	Introduction to Computational Theory	BSc	Introductory course for Engineers: combinatorics, graph theory, algorithms.
2007 2008 2009	Foundations of Computer Science	BSc	Introductory course for Engineers: combinatorics, graph theory, algorithms.
2011	Probability theory	MSc	Introductory course for Engineers: finite and continuous probability theory.

National University of Public Service, Department of Natural Sciences			
Date	Course name	Level	Description
2011 2012 2013 2014	Mathematics M I, II, III, IV	BSc	Various topics in calculus for military engineers

Contact details of academic referees

Miklós Rédei

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London School of Economics and Political Science
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László E. Szabó

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Gábor Sági

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