Zárójelentés *A fizika metafizikai alapkérdései formális megközelítésben*
című 115593-as számú NKFI-pályázathoz

A kortárs tudományfilozófia egyik legizgalmasabb területe a modern fizika alapjaihoz kapcsolódó filozófiai problémák megértése. Milyen konceptuális keretek között tárgyalhatóak adekvát módon a modern fizikai elméletek? Hogyan viszonyulnak a kauzalitás, determinizmus, valószínűség és lokalitás filozófiailag terhelt fogalmai azokhoz a tudományos elméletekhez, melyekben alapvető szerepet játszanak?

A kutatás célja: a fizika metafizikai alapkérdéseinek formális eszközökkel való tanulmányozása.

A kutatás főbb kérdései:
(a) Hogyan függ össze a lokalitás és a kauzalitás fogalma a klasszikus és kvantumos lokális fizikai elméleteinkben?
(b) Milyen kapcsolat van a kauzalitás fizikai és hétköznapi értelemben vett fogalmai között?
(c) Mi a determinizmus követelményének metafizikai létjogosultsága?
(d) Melyek a klasszikus- és kvantumvalószínűség interpretációs kérdései?
(e) Mi a téridő metafizikai és ismeretelméleti státusa az általános relativitáselméletben?

A kutatás legfőbb eredményei:
(a) A kvantumtérelméletekben megőrizhető a lokalitás fogalma a klasszikalitás feladása árán; a lokális kauzalitás a Bayes-hálók elméletéből ismert d-szeparáció fogalmával analóg; az Einstein-féle realitáskritérium a Közös ok elv speciális esete; a valószínűségnek megadható egy új kauzális interpretációja; a Kochen-Specker-argumentumok csak szimultán mérések esetében konkluzívak.
(b) A kauzalitás makroszkopikus fogalma visszavezethető a dinamika mikroszkopikus fogalmára; ez megoldja a kauzalitás számos konceptuális problémáját.
(c) A természettörvények természetének és a fizikai lehetőség fogalmának megfelelő választásával a determinizmus helyreállítható.
(d) Szemantikailag definiálható modális logikák egy olyan hierarchiája, mely a bayesianus hit-újraértékelések logikáját írja le; ezek a logikák nem axiomatizálhatók végesen; ami azt mutatja, hogy a hit-újraértékelések axiomatikus megközelítése erősen limitált.
(e) Definiálható a mezőszerű objektumok perzisztenciája a téridőn; megmutatható a téridőbeli események korreláció és kauzalitás fogalmának alapvető cirkularitása; fizikalista-formalista szempontból leírható az általános relativitáselmélet diffeomorfizmus-invarianciája.

Összesítés:
A projekt során 12 konferenciát szerveztünk, 167 előadást tartottunk, javarészt nemzetközi konferenciákon és neves külföldi egyetemek szemináriumain. 54 publikációnk jelent meg (köztük 1 könyv és 1 szerkesztett kötet), a tanulmányok nagy része a szakma top-kategóriás nemzetközi folyóirataiban. A részletekről ld. a csoport honlapját: http://phil.elte.hu/bpgroup/index.html.

Publikációk:
2020

1. Hofer-Szabó G., Three noncontextual hidden variable models for the Peres-Mermin square, European Journal for the Philosophy of Science. Forthcoming (2020)
2. Szabó, L.E. Intrinsic, Extrinsic, and the Constitutive A Priori, Found Phys 50, 555–567 (2020)
3. E. Szabó László: A végtelen idóluma, Magyar Tudomány, Tudomány 181(11), 1509-1522. (2020)
4. Márton Gömöri, On the Very Idea of Distant Correlations, Foundations of Physics 50, 530–554 (2020).
5. A. Banerjee, Z. Gyenis, Chromatic number of the product of graphs, graph homomorphisms, antichains and cofinal subsets of posets without AC, Commentationes Math. Univ. Carolinae, Accepted, (2020)
6. Balázs Gyenis, Determinism, physical possibility, and laws of nature, Foundations of Physics 50, 568-581 (2020)
7. Péter Fazekas and Balázs Gyenis and Gábor Hofer-Szabó and Gergely Kertész, A Dynamical Systems Approach to Causation, Synthese forthcoming (2020)

8. M. Rédei. On the tension between physics and mathematics. Journal of General Philosophy of Science, online first Februar 4, (2020)
9. M. Rédei and C. Hitchcock. The Common Cause Principle. Stanford Encyclopedia of Philosophy entry, published online January 13, (2020)
10. Hofer-Szabó G., On the three types of Bell's inequality, in Orly Shenker, Meir Hemmo (eds.) Quantum, Probability, Logic: The Work and Infuence of Itamar Pitowsky, Berlin: Springer, 353-374. (2020)
11. Hofer-Szabó G., Commutativity, comeasurability, and contextuality in the Kochen-Specker arguments, Philosophy of Science (forthcoming), (2020)

2019

12. Miklós Rédei, Wissenschaftstheoretische Eigenschaften der Wissenschaften in Musils 'Mann ohne Eigenschaften', In K. Kokai, editor, Robert Musil und die Modernen Wissenschaften, Wechselwirkungen. Peter Lang, NoPress, Wien, December, pp. 12-25. (2019)
13. Zalán Gyenis and Mikós Rédei, Having a look at the Bayes Blind Spot, Synthese (forthcoming), (2019)
14. Zalán Gyenis, Standard Bayes logic is not finitely axiomatizable, Online first, Reviews of Symbolic Logic, (2019)
15. Zalán Gyenis, Czy piraci powodują globalne ocieplenie?, Filozofuj! 2019:3(27)
16. Márton Gömöri and László E. Szabó, On the Persistence of the Electromagnetic Field, Journal for General Philosophy of Science 50(1), 43-61, (2019)
17. Gábor Hofer-Szabó, Quantum mechanics as a representation of classical conditional probabilities, Journal of Mathematical Physics, 60, 062106 (2019)

2018

18. Márton Gömöri, Valószínűség, véletlen és a közösok-elv ("Probability, randomness and the Common Cause Principe"), Magyar Filozófiai Szemle (Hungarian Philosophical Review), 62(2), 63-82, (2018)
19. William Brown, Zalán Gyenis, Miklós Rédei, The modal logic of Bayesian belief revision, Online first, Journal of Philosophical Logic, (2018)
20. Zalán Gyenis and Miklós Rédei, General properties of Bayesian learning as statistical inference determined by conditional expectations, Reviews of Symbolic Logic 10, 719-755, (2018)
21. Zalán Gyenis and Miklós Rédei, Categorial subsystem independence as morphism co-possibility, Communications in Mathematical Physics, 357, 447-465, (2018)
22. Zalán Gyenis, Algebraic characterization of the local Craig interpolation property, Bulletin of the Section of Logic, Vol. 47, No. 1, pp. 45–59, (2018)
23. Zalán Gyenis, On the modal logic of Jeffrey conditionalization, Logica Universalis, 12, Issue 3–4, 351–374, (2018)
24. Miklós Rédei, Categorial local quantum physics, Reality and Measurement in Algebraic Quantum Theory. Springer Proceedings in Mathematics and Statistics, Springer, (2018)
25. Miklós Rédei, Parallels and divergencies: Gödel and von Neumann, Magyar Filozófiai Szemle, 62(4):168–181, (2018)
26. Gábor Hofer-Szabó, Bell's local causality is a d-separation criterion, Reality and Measurement in Algebraic Quantum Theory. Springer Proceedings in Mathematics and Statistics, Springer, 67-82, (2018)
27. Gábor Hofer-Szabó and Péter Vecsernyés, Quantum Theory and Local Causality, Dordrecht: Springer Brief, (2018)
28. Gábor Hofer-Szabó, A kvantumelmélet nehéz öröksége, Különbség, 18/1, 81-87, (2018)

2017

29. Márton Gömöri and Tomasz Placek, Small probability space formulation of Bell's theorem, in: Gábor Hofer-Szabó and Leszek Wronski (eds.) Making it Formally Explicit – Probability, Causality and Indeterminism, European Studies in the Philosophy of Science Series Vol. 6, Springer Verlag (2017)
30. Márton Gömöri, Balázs Gyenis and Gábor Hofer-Szabó, How do macrostates come about?, in: Gábor Hofer-Szabó and Leszek Wronski (eds.) Making it Formally Explicit – Probability, Causality and Indeterminism, European Studies in the Philosophy of Science Series Vol. 6, Springer Verlag (2017)
31. Balázs Gyenis, Maxwell and the normal distribution: a colored story of probability, independence, and tendency toward equilibrium, Studies in History and Philosophy of Modern Physics, 57, 53-65 (2017)
32. Balázs Gyenis, Ki magyarázta először az egyensúly felé törekvést? (Who explained first the tendency towards equilibrium?), Fizikai Szemle, 750, 190-192 (2017)
33. Balázs Gyenis and Leszek Wronski, Is it the Principal Principle that implies the Principle of Indifference?, in: Gábor Hofer-Szabó and Leszek Wronski (eds.) Making it Formally Explicit – Probability, Causality and Indeterminism, European Studies in the Philosophy of Science Series Vol. 6, Springer Verlag (2017)
34. Zalán Gyenis, Skeleton in the Euclidean closet", Kálmán–Kornai 120 Festschrift, Beáta Gyuris, Katalin Mády, and Gábor Recski (eds.), Research Institute for Linguistics, (2017)
35. Zalán Gyenis and Miklós Rédei, A principled analysis of consistency of an Abstract Principal Principle, in: Gábor Hofer-Szabó and Leszek Wronski (eds.) Making it Formally Explicit – Probability, Causality and Indeterminism, European Studies in the Philosophy of Science Series Vol. 6, Springer Verlag, 3-33, (2017)
36. Zalán Gyenis, Gábor Hofer-Szabó and Miklós Rédei, Conditioning using conditional expectation: the Borel-Kolmogorov paradox, Synthese, 194(7), 2595-2630, (2017)
37. Gábor Hofer-Szabó, Julian Barbour időtlen világa, Veress Károly (ed.) Emlékezet és felejtés. Interdiszciplináris párbeszéd 5., Kolozsvár, Egyetemi Műhely Kiadó, 11-24., (2017)
38. Gábor Hofer-Szabó, Matematika, filozófia és megértés, Műhely, 5-6, 86-88., (2017)

39. Gábor Hofer-Szabó, A kvantummechanika és a huzat logikája, Magyar Tudomány, 44-47, (2017)
40. Gábor Hofer-Szabó, How human and nature shake hands: the role of no-conspiracy in physical theories, Studies in the History and Philosophy of Modern Physics, 57, 89-97 (2017)
41. Gábor Hofer-Szabó and Leszek Wronski (eds.) Making it Formally Explicit – Probability, Causality and Indeterminism, European Studies in the Philosophy of Science Series Vol. 6, Springer Verlag (2017)
42. László E. Szabó, Meaning, Truth, and Physics, in: Gábor Hofer-Szabó and Leszek Wronski (eds.) Making it Formally Explicit – Probability, Causality and Indeterminism, European Studies in the Philosophy of Science Series Vol. 6, Springer Verlag (2017)

2016

43. Zalán Gyenis and Miklós Rédei, Common cause completability of non-classical probability spaces, Belgrade Philosophical Annual 29, 15-32 (2016)
44. Zalán Gyenis and Miklós Rédei, Measure theoretic analysis of consistency of the Principal Principle, Philosophy of Science 83, 972-987, (2016)
45. Gábor Hofer-Szabó, Three principles leading to the Bell inequalities, Belgrade Philosophical Annual, 29, 57-66, (2016)
46. Gábor Hofer-Szabó and Péter Vecsernyés, A generalized definition of Bell's local causality, Synthese, 193(10), 3195–3207 (2016)

2015

47. Márton Gömöri and László E. Szabó, Formal statement of the special principle of relativity, Synthese, 192, 2053–2076 (2015)
48. Zalán Gyenis and Miklós Rédei, Defusing Bertrand's paradox, The British Journal for the Philosophy of Science, 66(2), 349–373 (2015)
49. Zalán Gyenis and Miklós Rédei, Why Bertrand's paradox is not paradoxical but is felt so, in U. Mäki, I. Votsis, S. Ruphy, G. Schurz (eds.), Recent Developments in the Philosophy of Science: EPSA13 Helsinki, Springer Verlag, 265–276 (2015)
50. Gábor Hofer-Szabó, Local causality and complete specification: a reply to Seevinck and Uffink, in U. Mäki, I. Votsis, S. Ruphy, G. Schurz (eds.), Recent Developments in the Philosophy of Science: EPSA13 Helsinki, Springer Verlag, 209-226 (2015)
51. Gábor Hofer-Szabó, Relating Bell's local causality to the Causal Markov Condition, Foundations of Physics. 45(9), 1110-1136 (2015)
52. Gábor Hofer-Szabó and Péter Vecsernyés, On the concept of Bell's local causality in local classical and quantum theory, Journal of Mathematical Physics, 56, 032303 (2015)
53. Gábor Hofer-Szabó, On the relation between the probabilistic characterization of the common cause and Bell's notion of local causality, Studies in the History and Philosophy of Modern Physics, 49, 32-41 (2015)
54. Yuichiro Kitajima and Miklós Rédei, Characterizing common cause closedness of quantum probability theories, Studies in History and Philosophy of Modern Physics, 52, 234-241 (2015)

Konferenciaszervezések:

1. Zalán Gyenis: Michael Makkai 80: Categories, models and logic, Renyi Institute of Mathematics, 21-22 June, 2019.
2. Balázs Gyenis: 2015: Third workshop of The Budapest-Krakow Research Groupon Probability, Causality and Determinism, MTA, Budapest (with Gábor Hofer-Szabó and Leszek Wronski)
3. Balázs Gyenis: 2016: Fifth workshop of The Budapest-Krakow Research Group on Probability, Causality and Determinism, MTA, Budapest (with Gábor Hofer-Szabó and Leszek Wronski)
4. Balázs Gyenis: 2017: Quantum Investigations: A conference in honour of Miklós Rédei, LSE, London (with Bryan Roberts)
5. Gábor Hofer-Szabó: Physicalism and Reduction -- a Jerusalem-Budapest twin workshop, Jerusalem workshop, 2018 November (with Orly Shenker).
6. Gábor Hofer-Szabó: Physicalism and Reduction -- a Jerusalem-Budapest twin workshop, Budapest workshop, 2019 December (with Orly Shenker).
7. Gábor Hofer-Szabó: Physics meets Philosophy series, Budapest, 2015 September (Vecsernyés Péterrel).
8. Gábor Hofer-Szabó: Physics meets Philosophy series, Budapest, 2016 September (Vecsernyés Péterrel).
9. Gábor Hofer-Szabó: Physics meets Philosophy series, Budapest, 2017 September (Vecsernyés Péterrel).
10. Gábor Hofer-Szabó: Physics meets Philosophy series, Budapest, 2018 September (Vecsernyés Péterrel).
11. Gábor Hofer-Szabó: Physics meets Philosophy series, Budapest, 2019 September (Vecsernyés Péterrel).
12. Gábor Hofer-Szabó: Physics meets Philosophy series, Budapest, 2020 September (Vecsernyés Péterrel).

Konferencia- és szemináriumi előadások:

2020

1. Márton Gömöri and Gábor Hofer-Szabó, "On the Meaning of EPR's Reality Criterion", Logic and Philosophy of Science Seminar, Eötvös University Budapest, 9 October 2020.

2. László E. Szabó, "Physicalism without the idols of mathematics", Logic and Philosophy of Science Seminar, Eötvös University Budapest, 16 October 2020.
3. László E. Szabó and Márton Gömöri, “The elimination of probability,” Physics Meets Philosophy: Physical Probability, Institute of Philosophy, Research Centre for the Humanities, Budapest, 2020 September.
4. L.E. Szabó, “Questionable and Unquestionable in Quantum Mechanics”, Physicalism and reduction – a Jerusalem–Budapest twin workshop, Budapest, December 2019.
5. M. Gömöri, Z. Gyenis, and L.E. Szabó: "Operationalist Approach to Quantum Theory: Two Representation Theorems", The British Society for the Philosophy of Science 2015 Annual Conference, Manchester, July 2015.
6. L. E. Szabó: “Meaning, Truth, and the Diffeomorphism Invariance”, Logic, Relativity and Beyond – 2nd international conference, Budapest, August 2015.
7. M. Rédei, “Having a look at the Bayes Blind Spot", Department of Theoretical Philosophy, University of Bucharest, Bucharest, Romania, February 26, 2020.
8. M. Rédei, “Philosophical Qualities of Science in Robert Musil’s `Man without Qualities’“, Research Institute of the University of Bucharest, Humanities Division, Bucharest, Romania, February 27, 2020
9. Gábor Hofer-Szabó, ”Simultaneous versus measurement contextuality in quantum theory,” Faculty of Philosophy, University of Barcelona, Spain, 2020 March.
10. B. Gyenis, "A Dynamical Systems Approach to Causation", Causation and Reduction: From Metaphysics to the Sciences, UIUC / Zoom, 2020, April.
11. M. Gömöri, “Outline of a Causal Theory of Chance,” LOGOS Seminar, University of Barcelona, 2020 February.

2019

12. Gábor Hofer-Szabó, ”Comment on Orly Shenker and Meir Hemmo's: The Physics of Implementing Logic: Landauer’s Principle and the Multiple-Computations Theorem,” Physicalism and Reduction workshop, Institute of Philosophy, Budapest, Hungary, 2019 December.
13. Gábor Hofer-Szabó, “Contextuality and the Kochen-Specker theorem,” Department of Philosophy, University of Bristol, UK, 2019 October.
14. Gábor Hofer-Szabó, “Two concepts of noncontextuality,” Sigma Club, London School of Economics, London, UK,, 2019 October.
15. Gábor Hofer-Szabó, “Between social and classical: contextuality in quantum theory,” Institute of Advanced Studies Kőszeg, 2019 October.
16. Gábor Hofer-Szabó, “Noncontextuality in quantum mechanics,” The Seventh Conference of the European Philosophy of Science Association, University of Geneva, Switzerland, 2019 September.
17. Márton Gömöri, Comment on Miklós Márton: “What is the ‘physical’? Attempts to define the term in the contemporary debates over physicalism,” Physicalism and Reduction – a Jerusalem-Budapest Twin Workshop, Institute of Philosophy, Research Centre for the Humanities, Budapest, 2019 December.
18. Márton Gömöri, “On the reality of the classical electromagnetic field,” Physics Meets Philosophy: On What There Is, Institute of Philosophy, Hungarian Academy of Sciences, Budapest, 2019 September.
19. Márton Gömöri, “A Causal Account of Initial Distributions,” 7th Biennial Conference of the European Philosophy of Science Association, University of Geneva, 2019 September.
20. Miklós Rédei, Work in Progress Seminar at Munich Center for Mathematical Philosophy, Ludwig-Maximilians University, Munich, Germany (January 24, 2019) Title of talk: “On the tension between mathematics and physics"
21. Miklós Rédei, “German Philosophy of Science Society Annual Conference", Cologne, Germany, (February 25-28, 2019) (joint talk with Z. Gyenis) Title of talk: "Features of Bayesian learning based on conditioning using conditional expectations"
22. Miklós Rédei, “Frühjahrstagung der Deutschen Physikalischen Gesellschaft", Munich, Germany (March 19, 2019) (invited plenary talk) Title of talk: “On the tension between mathematics and physics"
23. Miklós Rédei, Technical University of Munich, Garching, Germany (March 26, 2019) Title of talk: “On the tension between mathematics and physics"
24. Miklós Rédei, “Interpreting Quantum Mechanics: Old and New Philosophical Problems", Workshop, Department of Mathematics of the Polytechnic University of Milan, Milan, Italy (March 11, 2019) Title of talk: “Structural similarities and interpretational differences between classical and quantum probability theory"
25. Miklós Rédei, Theoretical Philosophy Forum, Institute of Philosophy, Eötvös University, Budapest, Hungary (April 10, 2019) (joint talk with W. Brown and Z. Gyenis) Title of talk: “Bayesian learning and modal logics"
26. Miklós Rédei, Department of Theoretical Philosophy, University of Bucharest, Bucharest, Romania, (April 3, 2019) Title of talk: “On the tension between mathematics and physics"
27. Miklós Rédei, Department of Philosophy, University of Geneve, Geneve, Switzerland (April 17, 2019) Title of talk: “Categorial Local Quantum Physics"
28. Miklós Rédei, “Relativistic Locality", Workshop, Munich Center for Mathematical Philosophy, Ludwig-Maximilians University, Munich, Germany (May 4, 2019) Title of talk: “How to express locality in categorial local quantum field theory"

29. Miklós Rédei, Department of Philosophy, University of Salzburg, Salzburg, Austria (June 3, 2019) Title of talk: “On the tension between mathematics and physics"
30. Miklós Rédei, Physics Colloquium, Department of Physics, University of Heidelberg, Heidelberg, Germany (June 7, 2019) Title of talk: “On the tension between mathematics and physics"
31. Miklós Rédei, “12th MUST Conference & Workshop `Perspectives on Scientific Error'", Munich, Germany (July 1-4, 2019) Title of talk: “A bird's eye view of conditioning in probability theory"
32. Miklós Rédei, “All things Reichenbach", Conference, Munich Center for Mathematical Miklós Rédei, Philosophy, Ludwig-Maximilians University, Munich, Germany (July 22-24, 2019) Title of talk: “Reichenbach's Common Cause Principle"
33. Márton Gömöri, “Why do outcomes in a long series of rolling a fair dice approximately follow the uniform distribution?,” 16th International Congress on Logic, Methodology and Philosophy of Science and Technology, Czech Technical University, Prague, Czech Republic, 2019 August.
34. Márton Gömöri, “Probability, causality and the approach to equilibrium,” Theoretical Philosophy Forum, Eötvös University, Budapest, 2019 May.
35. Zalán Gyenis, "Bayesian learning and modal logics," Mini-Workshop: Conditioning, Munich Center for Mathematical Philosophy, Munich, Germany, 2019 July.
36. Zalán Gyenis, "On the categorical characterization of the weak Beth definability property," Logic, categories and philosophy of mathematics: Michael Makkai 80, Budapest, Hungary, 2019 June.
37. Zalán Gyenis, "Bayesian learning and modal logics," Theoretical Philosophy Forum, Budapest, Hungary, 2019 April.
38. Zalán Gyenis, "Features of Bayesian learning based on conditioning using conditional expectations," Conference of the German Society for Philosophy of Science, Cologne, Germany, 2019 February.
39. Sunil Kumar Sekar and László E. Szabó, "On the origin of irreversibility", Theoretical Philosophy Forum, Institute of Philosophy, Eötvös University Budapest, 2019.March.
40. Sunil Kumar Sekar and László E. Szabó, "On the origin of irreversibility", Theoretical Philosophy Forum, Institute of Philosophy, Eötvös University Budapest, 2019.March
41. László E. Szabó, “Intrinsic, extrinsic, and the constitutive a priori", Theoretical Philosophy Forum, Institute of Philosophy, Eötvös University Budapest, 2018.April.
42. Balázs Gyenis, "A proof of tendency towards equilibrium", Sigma Club Lecture Series, Centre for Philosophy of Natural and Social Science, LSE, London, 2019 January.
43. Gábor Hofer-Szabó, “Two concepts of noncontextuality,” Deparment of History and Philosophy of Science, National and Kapodistrian University of Athens, Greece, 2019 June.
44. Gábor Hofer-Szabó, “Noncontextuality in physics and beyond,” Department of Cognitive Science and Psychology, New Bulgarian University, Sofia, Bulgaria, 2019 June.
45. Gábor Hofer-Szabó, “Bell's local causality in local physical theories,” Relativistic Locality Conference, Munich Center for Mathematical Philosophy, Munich, Germany, 2019 May.
46. Gábor Hofer-Szabó, “Two concepts of noncontextuality in quantum mechanics,” Philosophy of Physics Seminar, Munich Center for Mathematical Philosophy, Munich, Germany, 2019 May.
47. Gábor Hofer-Szabó, “Two concepts of noncontextuality in quantum mechanics,” Theoretical Philosophy Forum, Department of Logic, Eötvös University Budapest, 2019 April.

2018

48. Miklós Rédei, “Physics Meets Philosophy", Workshop, Institute of Philosophy, Hungarian Academy of Sciences, Budapest, Hungary (September 25, 2018) Title of talk “On the tension between mathematics and physics"
49. Miklós Rédei, “Robert Musil und die Modernen Wissenschaften", Workshop, Institute Vienna Circle, University of Vienna, Vienna, Austria (October 18-19, 2018) Title of talk: “Wissenschaftstheoretische Eigenschaften der Wissenschaften in Musils `Mann ohne Eigenschaften' "
50. Miklós Rédei, “Biennial Conference of the Philosophy of Science Association (PSA2018)" (November 1-4, 2018, Seattle, U.S.A.), Symposium organiser and joint talk with Z. Gyenis, Title of talk: “Features of Bayesian learning based on conditioning using conditional expectations"
51. Miklós Rédei, Logic and Philosophy of Science Colloquium at Munich Center for Mathematical Philosophy, Ludwig-Maximilians University, Munich, Germany (November 21, 2018) Title of talk: “Some features of Bayesian learning based on conditioning using conditional expectations"
52. Z. Gyenis, G. Hofer-Szabó. M. Rédei: “Kolmogorov’s (1933) solution of Borel’s (1903) Paradox” HOPOS2018, Groningen, The Netherlands, 2018 July.
53. Z. Gyenis, M. Rédei: “Categorial Independence in Categorial Quantum Field Theory” 19th UK-European Foundations of Physics Conference, Utrecht, The Netherlands, 2018 July.
54. M. Redei: “Four lectures on the Foundations of Quantum Field Theory” XXI Summer School in Philosophy of Physics, Philosophy of Quantum Field Theory, Urbino, Italy, 2018 June.
55. M. Rédei: “Foundations of quantum probability” Probability and the Many Worlds Interpretation of Quantum Mechanics, Workshop, London School of Economics, London, UK, 2018 July.
56. M. Rédei: “The Bayes Blind Spot is typically large” For a Bottom Up Epistemology, Workshop, Bertinoro, Italy June, 2018

57. Balázs Gyenis, "Towards new notion(s) of physical possibility", Popper Seminar, LSE, London, UK, 2018 November.
58. Balázs Gyenis, "Determinism, Physical Possibility, and Laws of Nature", Philosophy of Science Association Conference, Seattle, US, 2018 November.
59. Balázs Gyenis, "What powers inductive inference", The Material Theory of Induction and Beyond Conference, Pittsburgh, US, 2018 October.
60. Zalán Gyenis, "On the modal logic of statistical inference," Non-Classical Logic. Theory and Applications, Torun, Poland, 2018 September.
61. Zalán Gyenis, "Probabilistic update methods after their sort" and "Logic and updating methods", Entia et Nomina, Gdansk, 2018 August.
62. Zalán Gyenis, "The modal logic of Jeffrey conditionalization", UNILOG'18, Vichy, France, 2018 June.
63. Zalán Gyenis, "No finite axiomatizability for intermediate logics", LAPOM, Budapest, 2018 April.
64. Balázs Gyenis and Zalán Gyenis, "Results in Bayesian learning theory - In the footsteps of Miklós Rédei", Rédeifest, London, 2017 October.
65. Zalán Gyenis, "Multiverses - On a paper by Vaananen", LAPOM, Budapest, 2017 October.
66. László E. Szabó, "A végtelen idóluma", MTA BTK Filozófia Intézet / A végtelen fogalmai, Budapest, 2018 November.
67. László E. Szabó, Meaning, Truth, and Physics, Edelstein Center for History and Philosophy of Science, The Hebrew University of Jerusalem / Physicalism and Reduction, Jerusalem, 2018 November.
68. László E. Szabó, "I find it quite amazing that it is possible to predict what will happen by mathematics, which is simply following rules which really have nothing to do with the original thing", MTA BTK Filozófia Intézet/Physics Meets Philosophy: "The unreasonable effectiveness of mathematics in natural sciences", Budapest, 2018 September.
69. László E. Szabó, Comments on "Alison Fernandes: Three Accounts of Laws and Time", CEU, Conference on History and Metaphysics of the laws of nature, Budapest, 2018 July.
70. László E. Szabó, Intrinsic, extrinsic, and the constitutive a priori, U. of Krakow, Modality in Physics, Krakow, 2018.June.
71. László E. Szabó, Meaning, Truth, and Physics, Department of Philosophy, Logic and Scientific Method, LSE, London, 2018.June.
72. László E. Szabó, Empirical definitions of spatiotemporal conceptions, Department of Philosophy, Logic and Scientific Method, LSE, London, 2018.July.
73. László E. Szabó, "Comments on "Alison Fernandes: Three Accounts of Laws and Time", Conference on History and Metaphysics of the laws of nature, CEU, Budapest, 2018 July.
74. László E. Szabó, "Intrinsic, extrinsic, and the constitutive a priori", Modality in Physics, University of Krakow, Krakow, 2018 June.
75. László E. Szabó, "Intrinsic, extrinsic, and the constitutive a priori", Theoretical Philosophy Forum, Eötvös University Budapest, 2018 April.
76. Márton Gömöri and László E. Szabó, "The Unreality of Probability", Quantum Investigations: A Conference in Honour of Miklós Rédei, LSE, London, 2017 October.
77. László E. Szabó, "A Physicalist Account for Meaning and Truth in Physics", EPSA2017, European Philosophy of Science Association, Exeter, 2017 September.
78. Gábor Hofer-Szabó, "Do Kochen-Specker arguments prove quantum contextuality?," Reduction and Physicalism Conference, Hebrew University, Jerusalem, Israel, 2018 November.
79. Gábor Hofer-Szabó, "A fizika filozófiája" (Philosophy of Physics), Témaválasztási dilemmák a 21. századi filozófiában, Wesley János Lelkészképző Főiskola, Budapest, 2018 October.
80. Gábor Hofer-Szabó, "What is quantum contextuality and what is not," Foundations of Physics Conference, Utrecht, The Netherlands, 2018 July.
81. Gábor Hofer-Szabó, "Quantum contextuality," Philosophy of Science Reading Group, University of Salzburg, Austria, 2018 June.
82. Gábor Hofer-Szabó, "Modality of noncommuting common causes," Modality in Physics, Jagiellonian University, Krakow, Poland, 2018 June.
83. Gábor Hofer-Szabó, "Kochen-Specker arguments and quantum contextuality," Philosophy of Science Conference, Inter-University Center, Dubrovnik, Croatia, 2018 April.
84. Gábor Hofer-Szabó, "Contextuality," Institute of Advanced Studies Kőszeg, 2018 April.
85. Gábor Hofer-Szabó, "A kvantumelmélet és a tulajdonságok metafizikája" (Quantum theory and the metaphysics of properties), Department of Philosophy, Károli Gáspár University, Budapest, 2018 March.
86. Gábor Hofer-Szabó, "Commutativity, commeasurability, and contextuality," Theoretical Philosophy Forum, Department of Logic, Eötvös University Budapest, 2018 February.
87. Gábor Hofer-Szabó, "Contextuality," Institute seminar, Research Center for the Humanities, Budapest, Hungary, 2017 November.
88. Gábor Hofer-Szabó, "Bell's local causality in local physical theory," Quantum Investigations: A Conference in Honour of Miklós Rédei, London School of Economics, London, UK, 2017 October.
89. Gábor Hofer-Szabó, "How human and nature shakes hand: on the role of no-conspiracy in physical theories," The Sixth Conference of the European Philosophy of Science Association, University of Exeter, UK, 2017 September.

90. Márton Gömöri, “Why do initial conditions in an actual sequence of experiments approximately follow the uniform distribution over phase space with respect to the Lebesgue measure?,” Foundations 2018: The 19th UK and European Conference on Foundations of Physics, Utrecht University, 2018 July.
91. Márton Gömöri, “On the Very Idea of Distant Correlations,” Budapest Science Studies Laboratory, CEU, Budapest, 2018 November.
92. Márton Gömöri, “Outline of a Causal Theory of Chance,” Colloquium of the Düsseldorf Center for Logic and Philosophy of Science, University of Düsseldorf, Germany, 2018 October.
93. Márton Gömöri, “On the Role of Statistical versus Single-Case Dependencies in Einstein’s Incompleteness Arguments,“ Jagiellonian University, Kraków, 2018 June.
94. Márton Gömöri, “Probability, randomness and the Common Cause Principle,” Philosophy of Physics Reading Group, Leibniz University Hannover, 2018 May.
95. Márton Gömöri and László E. Szabó, “The Elimination of Probability,” Theoretical Philosophy Forum, ELTE, Budapest, 2017 December.
96. Márton Gömöri, “Fundamental questions in classical statistical mechanics,” Physics Meets Philosophy: Foundations of Thermodynamics and Statistical Mechanics, MTA, Budapest, 2017 September.
97. Balázs Gyenis, "Towards new notion(s) of physical possibility,” Modality in physics, Krakow (invited talk), June 2018.
98. Balázs Gyenis, “Do ideal gases have color?”, Science Studies Workshop, MTA-CEU (invited talk), June 2018.
99. Balázs Gyenis, “Physical possibility for actualists,” Theoretical Philosophy Forum, ELTE, May 2018.
100. Balázs Gyenis, “Approach towards equilibrium and the interpretation of probability,” SZTE TTIK Theoretical Physics Department Seminar (invited talk), March 2018.

2017

101. Balázs Gyenis, “Approach towards equilibrium and the interpretation of probability,” MTA Wigner FK RMI (invited talk), December 2017.
102. Gábor Hofer-Szabó, “Local causality in algebraic field theories,” The Third Logic, Relativity, and Beyond Conference, Rényi Institute of Mathematics, Budapest, 2017 August.
103. Márton Gömöri and László E. Szabó, “Derivation of the transformation laws for the electrodynamic quantities from electrodynamics without presuming covariance,” Logic, Relativity and Beyond, Rényi Institute, Budapest, 2017 August.
104. Márton Gömöri, “Derivation of the transformation laws for the electrodynamic quantities from electrodynamics without presuming covariance,” 6th Summer School on the History and Philosophy of Science: Understanding Relativity Theory, University of Tubingen, 2017 August.
105. Márton Gömöri, “Probability without probability,” THINK 3 Conference on Science and Society, Tata, 2017 July.
106. Márton Gömöri, “Probability, randomness and the Common Cause Principle,” Seminar Series of the Institute of Philosophy, Hungarian Academy of Sciences, Budapest, 2017 July.
107. Gábor Hofer-Szabó, “A dynamical systems appoach to causation,” Triennial International Conference of the Italian Society for Logic and Philosophy of Science, University of Bologna, Italy, 2017 June (with Péter Fazekas, Balázs Gyenis, and Gergely Kertész).
108. Balazs Gyenis, “Humean supervenience and objective modality”, Modally rich metaphysical landscapes, Krakow, 2017 June.
109. Gábor Hofer-Szabó, “Bell’s local causality,” The Descartes Centre for the History and Philosophy of the Sciences and the Humanities, University of Utrecht, The Netherlands, 2017 May.
110. Gábor Hofer-Szabó, “Three levels of Bell’s inequalities,” Logic and Interactive Rationality Seminar, University of Amsterdam, The Netherlands, 2017 May.
111. Gábor Hofer-Szabó, “On the Common Cause Principle,” Philosophy of Physics Seminar, Institute of Philosophy, Stockholm University, Sweden, 2017 April.
112. Gábor Hofer-Szabó, “Local causality in quantum theory,” Department of Philosophy, University of Belgrade, Belgrade, Serbia, 2017 April.
113. Márton Gömöri, “Monty Hall on the Humean Mosaic,” Theoretical Philosophy Forum, Eötvös University, Budapest, 2017 April.
114. Gábor Hofer-Szabó, “Publishing a paper in a journal,” Philosophy Publication Workshop, Central European University, Budapest, 2017 March.
115. Zalán Gyenis and William Brown, “The modal logic of Bayesian learning,” Logic and Philosophy of Mathematics, Department of Logic, Eotvos Lorand University, Budapest, 2017 March.
116. Zalán Gyenis and Miklós Rédei, “Categorial subsystem independence as morphism co-possibility,” Theoretical Philosophy Forum, Department of Logic, Eotvos Lorand University, Budapest, 2017 March.
117. Márton Gömöri, “On the Persistence of the Electromagnetic Field,” Lunchtime Colloquium of the Center for Philosophy of Science, University of Pittsburgh, 2017 March.
118. Márton Gömöri, “On the relation of the relativity principle and covariance,” Meeting of the Southern California Philosophy of Physics Group, University of California, Irvine, 2017 March.

119. Gábor Hofer-Szabó, “Quantum theory and local causality,” (talk on skype) IMT School for Advanced Studies Lucca, Italy, 2017 February.

2016

120. László E. Szabó, “Mi is az az ‘általános relativitás’?” (What is general relativity?), 100 éves az általános relativitáselmélet, Nemzeti Közszolgálati Egyetem, Budapest, 2016 November.
121. László E. Szabó, “Az okozás ontológiája” (The ontology of causation), Az okság mint az “univerzum cementje”, MTA, Budapest, 2016 November.
122. László E. Szabó, “Time as constitutive a priori”, FLOW OF TIME, Mini-symposium of the Philosophy of Physics Research Group, MTA BTK Filozófia Int., Budapest, 2016 November.
123. Gábor Hofer-Szabó, “A Bell-egyenlőtlenségek” (Bell inequalities), Department Seminar, Institute of Theoretical Physics, Budapest University of Technology and Economics, 2016 November.
124. Gábor Hofer-Szabó, “Kauzalitás és dinamika” (Causality and dynamics), Magyar Tudomány Ünnepe, Institute of Philosophy, Hungarian Academy of Sciences, 2016 November.
125. László E. Szabó, “‘The laws of physics have the same form in all inertial frames of reference.’ Philosopher reads physics.”, Science Studies in Budapest, CEU, Budapest, 2016 October.
126. Miklós Rédei, “General properties of Bayesian learning based on conditional expectation as a conditioning device” Popper Seminar, London School of Economics, London, UK, October 22, 2016.
127. Gábor Hofer-Szabó, “Einstein realitáskritériuma” (Einstein’s reality criterion), Department Seminar, Institute of Philosophy and History of Science, Budapest University of Technology and Economics, 2016 October.
128. Gábor Hofer-Szabó, “Julian Barbour időtlen világa” (The timeless world of Julian Barbour), Emlékezet és felejtés, Bolyai Társaság, Babes-Bolyai Egyetem, Kolozsvár (Cluj-Napoca), Romania, 2016 October. “On the Budapest Research Group,” Science Studies in Budapest, Central European Univesity, Budapest, 2016 October.
129. Miklós Rédei, “Categorial subsystem independence as morphism co-possibility” Local Quantum Physics and beyond - in memoriam Rudolf Haag (September 26-27, 2016, DESY, Hamburg, Germany).
130. László E. Szabó, “The principle that ought to be generalized: the special principle of relativity”, Sixth Workshop of the Budapest –Krakow Research Group on Probability, Causality and Determinism, Krakow, 2016 September.
131. Gábor Hofer-Szabó, “Deconstructing superposition,” The Sixth Budapest-Krakow Workshop on Probability, Causality and Determinism, Research Center for the Humanities, Krakow, Poland, 2016 September.
132. Gábor Hofer-Szabó, “Einstein’s reality criterion,” XII Conference of the Italian Society for Analytic Philosophy, Pistoia, Italy, 2016 September.
133. Gábor Hofer-Szabó, “Mik a kvantumállapotok?” (What are quantum states?), Physics meets philosophy, Institute of Philosophy, Hungarian Academy of Sciences, 2016 September.
134. Gábor Hofer-Szabó, “The Common Cause Principle,” Analytic Philosophy Department, Czech Academy of Sciences, Prague, Czechy, 2016 September.
135. Zalán Gyenis, “The modal logic behind Bayesian learning,” Sixth Workshop of the Budapest-Krakow Research Group on Probability, Causality and Determinism, Jagiellonian University, Krakow, 2016 Sept.
136. Zalán Gyenis, “General properties of Bayesian learning as statistical inference determined by conditional expectation I and II,” Entia et Nomina, Warszawa, 2016 Sept.
137. Zalán Gyenis, “How much can a Bayesian agent learn?,” Entia et Nomina, Warszawa, 2016 Sept.
138. Balazs Gyenis, “The Free Will Problem in the light of the Dynamical Systems approach to causation,” The Fifth Workshop of the Budapest-Krakow Research Group on Probability, Causality, and Determinism, Budapest, 2016 September.
139. Miklós Rédei, “General properties of Bayesian learning based on conditional expectation as a conditioning device”, British Society for Philosophy of Science Conference, Cardiff, UK, 2016, July.
140. Miklós Rédei, “Having a look at what a Bayesian Agent does not see (the Bayes Blind Spot)”, 8th Quadrennial International Fellows Conference, Lund, Sweden, 2016 July.
141. László E. Szabó, ”Empirical Definitions of Spatiotemporal Conceptions“, University of Lund, Eighth International Pittsburgh Center for Philosophy of Science Fellows Conference, Lund, Sweden, 2016 July.
142. Gábor Hofer-Szabó, ”On the meaning of EPR’s Criterion of Reality,” Eighth Quadrennial Pittsburgh Fellows Conference, Lund University, Lund, Sweden, 2016 July.
143. Márton Gömöri and Gábor Hofer-Szabó, ”On the Meaning of EPR’s Criterion of Reality” British Society for the Philosophy of Science Annual Conference, Cardiff University, 2016 July.
144. Márton Gömöri and László E. Szabó, “For the 40th Birthday of Bell’s Spaceships” The 18th UK and European Conference on Foundations of Physics, London School of Economics and Political Science, 2016 July.
145. Miklós Rédei, “Categorial local quantum field theory”, Methaphysics and Fundamental Physics, Bristol, UK, 2016 June.
146. Gábor Hofer-Szabó, “Quantum mechanics as a representation of classical conditional probabilities,” Quantum Foundations workshop, Quantum Information Theory Group, University of Pavia, Pavia, Italy, 2016 June.

147. Gábor Hofer-Szabó, ”Quantum mechanics from scratch,” The Fifth Budapest-Krakow Workshop on Probability, Causality and Determinism, Research Center for the Humanities, Budapest, Hungary, 2016 May.
148. Zalán Gyenis and Miklós Rédei, ”Having a look at what a Bayesian Agent cannot see“, Fifth Budapest-Krakow Workshop on Probability, Causality and Determinism, Budapest, 2016 May.
149. Balázs Gyenis, “Freedom and laws of nature” (Szabadság és természeti törvenyek”), Ütközéspontok 3 (co-refereeing, in Hungarian), 2016 May.
150. Balázs Gyenis, “The Free Will Problem in the light of the Dynamical Systems approach to causation,” The Fifth Workshop of the Budapest-Krakow Research Group on Probability, Causality, and Determinism, 2016 May.
151. Márton Gömöri, “Chance in a Physical World”, Fifth Workshop of the Budapest-Krakow Research Group on Probability, Causality and Determinism, Institute of Philosophy, Hungarian Academy of Sciences, Budapest, 2016 May.
152. Miklós Rédei, “John von Neumann: episodes from his life and comments on his work”, Cohn Institute, Tel Aviv University, Israel, 2016, April.
153. Miklós Rédei, “Why Bertrand’s paradox is not paradoxical but is felt so”, Bar Hillell Colloquium, The Hebrew University of Jerusalem, Jerusalem, Israel, 2016, April.
154. Gábor Hofer-Szabó, “How man and nature shakes hand: the role of no-conspiracy in physical theories,” Institute of Philosophy, Jagiellonian University, Krakow, Poland, 2016 March.
155. Zalán Gyenis and Miklós Rédei, ”Properties of Bayesian learning based on conditional expectation as a conditioning device“, Institutional seminar of MTA Institute of Philosophy, Budapest, 2016 January.

2015

156. Miklós Rédei, ”Informal, early Reception of Imre Lakatos’ Proofs and Refutation”, Research Institute of Humanities, University of Bucharest, Romania, 2015 December.
157. Miklós Rédei, “Local causality in categorial quantum field theory,” Causality and Non-locality in Physics, Quantum and Classical, University of the Basque Country, San Sebastián, Spain, 2015 November.
158. Gábor Hofer-Szabó, ”Local causality in local physical theories,” Causality and Non-locality in Physics, Quantum and Classical, University of the Basque Country, San Sebastián, Spain, 2015 November.
159. Zalán Gyenis, ”Gödel nem-teljességi tételei az elsőrendű logika töredékeire“, A tudomány ünnepe, BME, Budapest, 2015 November.
160. Gábor Hofer-Szabó, “Einstein’s reality criterion,” Department of Philosophy, University of Haifa, Haifa, Israel, 2015 October.
161. László E. Szabó, ”On the semantics of spacetime theories,“ Budapest, MTA BTK Fil. Int. / Physics Meets Philosophy: In Time, Budapest, 2015 September.
162. Gábor Hofer-Szabó, Zalán Gyenis and Miklós Rédei, ”Conditioning using conditional expectation: the Borel-Kolmogorov paradox,” Fifth Conference of the European Philosophy of Science Association, Düsseldorf, Germany, 2015 September.
163. Balázs Gyenis, Gábor Hofer-Szabó and Márton Gömöri, “On the Emergence of Macrostates,” The Fourth Budapest-Krakow Workshop on Probability, Causality and Determinism, Institute of Philosophy, Jagiellonian University, Krakow, Poland, 2015 September.
164. Balázs Gyenis, “Is time fundamental? What makes time special?”, Physics Meets Philosophy: In Time, Budapest, 2015 September.
165. Balázs Gyenis, “Can a Bayesian learn a new probability?,” Entia et Nomina, Kraków, Poland, 2015 September.
166. Márton Gömöri, ”A short remark on generalizing probability spaces in quantum mechanics”, Fourth Workshop of the Budapest-Krakow Research Group on Probability, Causality and Determinism, Jagiellonian University, Krakow, 2015 September.
167. Zalán Gyenis and Miklós Rédei, ”Having a look at what a Bayesian Agent cannot see“, Theoretical Philosophy Forum, Budapest, 2015 April.