

Date of birth: April 24, 1988

Position: Lecturer, University of Manchester (UK)

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Degrees

- PhD in Mathematics, University of Szeged, 2016 (*thesis: F-inverse covers of E-unitary inverse monoids*)
- MSc in Mathematics, University of Szeged, 2012
- BSc in Mathematics, University of Szeged, 2010

Positions

- Lecturer, University of Manchester (UK), 2021-present
- Lecturer, University of Szeged (Hungary), 2021
- Marie Curie Postdoctoral Research Fellow, University of York (UK), 2019-2020
- Lecturer, University of Szeged (Hungary), 2018-2019
- Postdoctoral Researcher, University of Porto (Portugal), July-December, 2017
- Research Assistant, University of Szeged (Hungary), 2015-2016

Research visits

- University of Nebraska-Lincoln (USA), August-December, 2013
- short visits to University of York (2017), City College of New York (2019)

Grants

as principal investigator:

- Marie Curie Individual Fellowship 2017 (at the University of York, UK), total budget: 183000 EUR
- Apáczai Csere János grant for PhD students, 2014, total budget: 1,8M HUF

- Campus Hungary grant for one semester abroad, 2013, total budget: 861000 HUF

as a participating researcher:

- NKFI (National Research, Development and Innovation Fund, Hungary), project: Algebras and their classes: structure and complexity, 2018-2022, total budget: 12M HUF
- OTKA (Hungarian Scientific Research Fund), project: Classes of algebras and clones, 2015-2019, total budget: 21,5M HUF
- OTKA (Hungarian Scientific Research Fund), project: Algebras and relational structures, 2013-2017, total budget: 12M HUF

Scientific awards, honors

- Pro Laudanda Promotio, 2019, *awarded by the Doctoral School of the University of Szeged, to 6 outstanding early career researchers who had obtained their PhD at the University of Szeged*
 - Géza Grünwald medal, 2018, *awarded by the János Bolyai Mathematical Society (Hungary) to at most 5 early career researchers in pure mathematics each year*
 - Exceptional student of the University of Szeged, 2012, *awarded by University of Szeged, Faculty of Science and Informatics, to 6 students each year*
 - Discipuli pro Universitate, 2012, *awarded by the University of Szeged to one senior MSc student each year per faculty*
 - Sófi József Scholarship, main award, 2012, *awarded by “Sófi Foundation for Talents” to 5 students of University of Szeged each year*
 - Fellowship granted by the Republic, 2011, *awarded by the Republic of Hungary to university students with exceptional performance*
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Publications

Preprints:

- [1] B. Steinberg, N. Szakács: *On the simplicity of Nekrashevych algebras of contracting self-similar groups*, preprint (submitted to Duke Math. J.), [arXiv:2008.04220](https://arxiv.org/abs/2008.04220)
- [2] R. Gray, P. Silva, N. Szakács: *Algorithmic properties of inverse monoids with hyperbolic and tree-like Schützenberger graphs*, preprint (submitted to J. Algebra), [arXiv:1912.00950](https://arxiv.org/abs/1912.00950)

Published:

- [3] J. Meakin, N. Szakács: *Inverse monoids and immersions of Δ -complexes*, Internat.

- J. Algebra and Comput (2021) doi.org/10.1142/S0218196721400117, [arXiv:1709.03887](https://arxiv.org/abs/1709.03887)
- [4] B. Steinberg, N. Szakács: *Simplicity of inverse semigroup and étale groupoid algebras*, Adv. Math, **386** (2021) [arXiv:2006.13787](https://arxiv.org/abs/2006.13787)
- [5] R. Jajcay, T. Jajcayova, N. Szakács, M. Szendrei: *Inverse monoids of partial graph automorphisms*, J. Algebr. Comb. **53** (2021) 829-849, [arXiv:1809.04422](https://arxiv.org/abs/1809.04422)
- [6] N. Szakács, M. Szendrei: *On F-inverse covers of finite-above inverse monoids*, J. Algebra, **452** (2016) 42-65, [arXiv:1511.09378](https://arxiv.org/abs/1511.09378)
- [7] N. Szakács: *On the graph condition regarding the F-inverse cover problem*, Semigroup Forum, **92** (2016) 551-558, [arXiv:1501.06466](https://arxiv.org/abs/1501.06466)
- [8] G. Czédli, T. Dékány, L. Ozsvárt, N. Szakács, B. Udvari: *On the number of slim, semimodular lattices*, Mathematica Slovaca, **66** (2016) 5-18, [arXiv:1208.6173](https://arxiv.org/abs/1208.6173)
- [9] J. Meakin, N. Szakács: *Inverse monoids and immersions of 2-complexes*, Internat. J. Algebra and Comput., **25** (2015) 301-323, [arXiv:1401.2621](https://arxiv.org/abs/1401.2621)

Conference talks

- International Conference on Semigroups and Applications, **invited speaker**, “*Simplicity of contracted inverse semigroup algebras*”, Cochin, India, Dec 9, 2019.
- NBSAN-meeting, **invited speaker**, “*Inverse monoids and immersions of cell complexes*”, Manchester, UK, Jul 12, 2019.
- Semigroups and Groups, Automata, Logics 2019, “*Inverse monoids with tree-like Schützenberger graphs*”, Cremona, Italy, June 10, 2019.
- International Conference on Semigroups 2018 (on the occasion of Mária Szendrei’s 65th birthday), **invited speaker**, “*Inverse monoids of partial graph automorphisms*”, Lisbon, Portugal, July 12, 2018.
- Rhodesfest81 (A conference in honor of John Rhodes’ 81st birthday), **invited speaker**, “*Inverse monoids and immersions of cell complexes*”, Ramat Gan, Israel, Jun 5, 2018
- Winter One-relator Workshop, **invited speaker**, “*Two examples of geometric methods in inverse semigroup theory*”, Norwich, UK, Jan 11, 2018
- 16th ITAT: Information Technologies – Applications and Theory, “*Inverse monoids and immersions over 2-complexes*”, Tatranské Matliare, Slovakia, Sept 17, 2016
- AMS-EMS-SPM International meeting, Algebraic theory of semigroups and applications special session, **invited speaker**, “*On the graph condition regarding the F-inverse cover problem*”, Porto, Portugal, June 13, 2015
- CSM The third conference for PhD students in mathematics, “*Inverse monoids and immersions of 2-complexes*”, Szeged, Hungary, July 1, 2014

- AAA87 & CYU28, “*On the membership problem for closed inverse submonoids of inverse monoids*”, Linz, Austria, Feb 9, 2014
- Conference on Universal Algebra and Lattice Theory, “*On the number of slim, semimodular lattices*”, Szeged, Hungary, June 24, 2012

Seminar talks

- *Simplicity Nekrashevych algebras of contracting self-similar groups*, Mathematical Institute, Göttingen, (online, Jan 14, 2021)
- *Simplicity Nekrashevych algebras of contracting self-similar groups*, Western Sydney University, (online, Oct 22, 2020)
- *Simplicity Nekrashevych algebras of contracting self-similar groups*, Alfréd Rényi Institute of Mathematics, (online, Sept 28, 2020)
- *Simplicity of contracted inverse semigroup algebras*, University of Szeged, (Hungary, Sept 2, 2020).
- *Simplicity of contracted inverse semigroup algebras*, University of York, (online, May 20, 2020).
- *Hyperbolic and tree-like inverse monoids*, University of York, (UK, Oct 17, 2019).
- *Algorithmic properties of tree-like inverse monoids*, Heriot-Watt University, (Edinburgh, UK, May 22, 2019).
- *Algorithmic properties of tree-like inverse monoids*, City University of New York, (USA, May 10, 2019).
- *Algorithmic properties of tree-like inverse monoids*, University of St Andrews, (UK, Apr 4, 2019).
- *Inverse monoids and immersions of cell complexes*, University of York, (UK, March 13, 2019).
- *Hyperbolic groups and generalizations I-II*, University of Szeged, (Hungary, March 14 & 21, 2018).
- *Inverse monoids and immersions of cell complexes*, University of Porto, (Portugal, Nov 24, 2017).
- *Inverse monoids and immersions of cell complexes*, NOVA University Lisbon, (Portugal, Nov 20, 2017).
- *Inverse monoids and immersions of cell complexes*, University of Coimbra, (Portugal, Oct 17, 2017).
- *The algebraic structure of partial automorphisms of graphs*, University of York, (UK, July 7, 2017).
- *The algebraic structure of partial automorphisms of graphs*, Alfréd Rényi Institute of Mathematics, (Budapest, Hungary, May 8, 2017).

- *Inverse monoids and immersions of 2-complexes*, Alfréd Rényi Institute of Mathematics, (Budapest, Hungary, Apr 25, 2014).
- *Inverse monoids and immersions of 2-complexes*, University of Szeged, (Hungary, March 5, 2014).
- *F-inverse covers of inverse monoids*, University of Nebraska-Lincoln, (USA, Nov 5, 2013).
- *F-inverse covers of E-unitary inverse monoids*, University of Szeged, (Hungary, Apr 17, 2013).

Events organization

- York Semigroup weekly seminar series, main organizer, March 2019-Dec 2020
- [Topics in Geometric Semigroup Theory](#) 3-day workshop, main organizer, York, ~~17-19 June 2020~~ postponed due to COVID-19
- International Conference on Semigroups (on the occasion of Mária Szendrei's 65th birthday), co-organizer, Lisbon, July 11-13, 2018

Committee memberships

- Equality and Good Practice Committee, University of York, June 2019-Dec 2020

Teaching

Courses taught:

to mathematics majors:

- Linear Algebra (University of Szeged, year 1), lectures and problems classes
- Discrete Mathematics (University of Szeged, year 1), lectures and problems classes
- Algebra and Number Theory (University of Szeged, year 2), lectures and problems classes
- Abstract Algebra (University of Szeged, year 2), problems classes
- Groups and Fields (University of Szeged, year 2-3), problems classes
- Group Theory (University of Szeged, year 4), problems classes
- Semigroup Theory (University of York, years 3-4), lectures and problems classes

to teaching majors:

- Elementary Mathematics (University of Szeged, year 1), problems classes (no lecture)

service courses:

- Linear Algebra (University of Szeged, economics majors), problems classes
- Discrete Mathematics I—III (University of Szeged, computer science majors), lectures and problems classes
- Applied Statistics (University of Szeged, computer science majors), problems classes

Outreach activities

Talks given:

- “*Two riddles and linear algebra*”, Porto, Nov 2, 2017, event: iNIGMA “Seminários Diagonais”, audience: university students
- “*How (not) to be wrong – the power of mathematical thinking*”, Szeged, July 12, 2017, event: HÍD camp, audience: senior high school students
- “*The invariable*”, Szeged, April 22, 2017, event: University Spring in the Bolyai Institute, audience: general public
- “*How (not) to be wrong – the power of mathematical thinking*”, Szeged, April 4, 2017, event: Eötvös Nights, audience: university students
- “ *$V-E+F=2$ – the Euler characteristic*”, Szeged, March 1, 2016, event: Awarding Ceremony of the TUDOD? riddle competition, audience: university students
- “*The famous Riemann hypothesis*”, Szeged, April 18, 2015, event: University Spring in the Bolyai Institute, audience: general public

(I was also scheduled to do a Royal Institute Masterclass in March 2020, which was cancelled due to the pandemic.)

Other:

- creator of an [interactive website](#) of mathematical riddles called “TUDOD?” (in Hungarian)
- volunteer at the Mathematics Connects Association (Hungary)