

Dr Goran Malic

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Education

PhD in Pure Mathematics, University of Manchester, received 09/11/2015,

1. Malic G. Grothendieck's dessins d'enfants and the combinatorics of Coxeter groups. PhD thesis, University of Manchester, 2015. Supervised by Prof Alexandre Borovik.

Online access: <https://www.escholar.manchester.ac.uk/jrul/item/?pid=uk-ac-man-scw:283132>

University Diploma in Mathematics, University of Zagreb, received 01/11/2011

2. Malic G. Intrinsic description of shape for topological spaces. Senior thesis, University of Zagreb, 2011. Supervised by Prof Zvonko Cerin.

Professional Experience

- LinKaGe Lab - Smith College/UMass 01/06/2019 – Present
 - Postdoctoral Research Associate
 - Supervisor: Prof Ileana Streinu, istreinu@cs.umass.edu
- Harvard Radcliffe Institute for Advanced Science 01/02/2019 – 01/06/2019
 - Postdoctoral Research Associate
 - Supervisor: Prof Ileana Streinu, istreinu@cs.umass.edu
 - Supervisor: Prof Ciprian S. Borcea, borcea@rider.edu
- Zagreb School of Economics and Management, Zagreb, Croatia, 01/02/2018 – 01/02/2019
 - Postdoctoral Teaching Fellow
 - Supervisor: Prof Kristina Soric, ksoric@zsem.hr
- VMS d.o.o., Zagreb, Croatia, 01/09/2016 – 15/12/2017
 - Data engineer, android developer
 - Consultant for scientific and technical content
- University of Manchester, Manchester, UK, 01/02/2016 – 01/07/2016
 - Visiting Lecturer
 - Supervisor: Dr CRC Steele, colin.steele@manchester.ac.uk
- University of Manchester, Manchester, UK 24/09/2012 – 01/02/2016
 - Teaching assistant and Lead demonstrator
 - Supervised by various faculty members

Areas of expertise: graph theory, matroid theory, combinatorics, computational algebraic geometry, Galois theory, representation theory of quiver algebras

Programming Languages (order by experience)

- Mathematica: Dynamic visualization (graphs, data), algebraic geometry, elimination theory, Grobner bases
- Macaulay2: Rings and ideals, algebraic geometry, elimination theory, Grobner bases, matroid theory
- GAP: Group theory, algebraic geometry, quiver path algebras
- LaTeX
- C/C++

Publications

3. Malic G, Schroll S. *Dessins d'enfants and Brauer configuration algebras*, to appear in: "Galois covers, Grothendieck-Teichmüller Theory and Dessins d'Enfants, Interactions between geometry, topology, number theory, and algebra", Springer Proceedings in Mathematics & Statistics (2019). arXiv:1908.05509
4. Malic G, Schroll S. *Dessins d'enfants, Brauer graph algebras and Galois invariants*, submitted to Algebra and Number Theory. arXiv:1902.09876
5. Malic G. *An action of the Coxeter group BC_n on maps on surfaces, Lagrangian matroids and their representations*. arXiv:1507.01957v3 [math.CO]. Submitted to Journal of Comb. Theory B.
6. Malic G. *Dessins, their delta-matroids, and partial duals*. In: Siran, Jajcay (Eds.), Symmetries in Graphs, Maps and Polytopes, Springer Proceedings in Mathematics and Statistics, pp. 213-248, 2016.

In Preparation

7. Malic G, Streinu I. Unsolvability of Laman graphs.

Memberships

- London Mathematical Society, since 2016.

Research Visits

University of Leicester, Department of Mathematics, visiting Prof Schroll	03/01/19 – 12/01/19
University of Leicester, Department of Mathematics, visiting Prof Schroll	22/05/18 – 15/06/18
University of Leicester, Department of Mathematics, visiting Prof Schroll	05/03/18 – 09/03/18
University of Manchester, School of Mathematics, visiting Prof Borovik	19/06/17 – 23/06/17
MFO-Oberwolfach, visiting Dr Manjunath (Leibniz fellow)	05/02/17 – 12/02/17

Invited presentations to internationally established conferences and workshops

- *Matroids of dessins d'enfants and the action of the absolute Galois group $Gal(Q)$* . CG18 Combinatorial Geometries: matroids, oriented matroids and applications, CIRM, September 24-28, 2018.
- *Brauer Graph Algebras and dessins d'enfants. Galois covers*, Grothendieck-Teichmüller theory and Dessins d'Enfants, Leicester, UK, June 4-7, 2018.
- *Compact Riemann Surfaces and Ramified Covers*. Project talk at the French-German Summer School in Galois Theory and Number Theory, Konstanz, July 18-24 2015.
- *Are there (non-trivial) matroidal Galois invariants of dessins?* SIGMAP - Symmetries In Graphs, Maps And Polytopes, ELIM Conference Centre, West Malvern, UK, July 7-11, 2014.
- *Ramified coverings of the Riemann sphere and Galois Theory: an introduction to the theory of dessins d'enfants*. Contributed talk at the Young Topologists Meeting 2014, Copenhagen, Denmark, June 30 - July 4, 2014.
- *Maps on Surfaces and Matroids*. SIAM Conference on Discrete Mathematics (DM14), Minneapolis, Minnesota, USA, June 16-19, 2014.

Other research talks

- *Dessins d'enfants*. Harvard Radcliffe Institute for Advanced Science, Cambridge, USA, 19 February, 26 February, 5 March, 2019.
- *Strebel differentials*. University of Leicester Algebra and Geometry Seminar, Leicester, UK, January 9, 2019
- *Topological properties of oriented matroids*. University of Manchester Topology Seminar, Manchester, UK, June 27, 2016.
- *Maps on surfaces, matroids and Galois theory*. QMUL Algebra Seminar, London, UK, Feb 1, 2016.

- *Themes from Grothendieck's Esquisse*. The University of Manchester Algebra Seminar, Manchester, UK, September 29, 2015.
- *Tropical curves from maps on surfaces*. The University of Manchester Tropical Mathematics Reading Group, Manchester, UK, March 11, 2015.
- *The absolute Galois group, Grothendieck's Esquisse and the Inverse Galois Problem*. The University of Manchester Pure Mathematics Postgraduate Seminar, Manchester, UK, November 14, 2014
- *The 20th Anniversary of the Proof of Fermat's Last Theorem*. The University of Manchester Galois Group (undergraduate group), Manchester, UK, November 12, 2014.
- *Partial duals of maps on surfaces and their monodromy and automorphism groups*. Groups and their Applications "Triangle", Birkbeck, University of London, London, UK, November 5, 2014.
- *Introduction to the theory of Grothendieck's dessins*. University of Zagreb, Department of Mathematics, Topology Seminar, Zagreb, Croatia, September 15, 2014.
- *Interplay between combinatorics and Galois Theory*. The University of Manchester Informal Discrete Mathematics Seminar, Manchester, UK, March 26, 2014.
- *Towards the Grothendieck-Teichmüller Group*. The University of Manchester Topology Seminar, Manchester, UK, February 10, 2014.
- *Matroids*. University of Zagreb, Department of Mathematics, Geometry Seminar, Zagreb, Croatia, January 13, 2014.
- *Cell decompositions of decorated Moduli Spaces*. The University of Manchester Informal Discrete Mathematics Seminar, Manchester, UK, December 4, 2013.
- *Moduli Spaces of Compact Riemann Surfaces*. The University of Manchester Pure Mathematics Postgraduate Seminar, Manchester, UK, November 29, 2013.
- *Matroids*. The University of Manchester Pure Mathematics Postgraduate Seminar, Manchester, UK, May 24, 2013.
- *Grothendieck's dessins d'enfants and an action of the absolute Galois group*. The University of Manchester Informal Discrete Mathematics Seminar, Manchester, UK, April 29, 2013.
- *Intrinsic Description of Shape for Compact Metric Spaces*. University of Zagreb, Department of Mathematics, Topology Seminar, Zagreb, Croatia, February 6, 2012.

Organisation of conferences and seminars

- Organiser of the Discrete Mathematics seminar at the University of Manchester for 2015/16
- Co-organiser of the 88th Transpennine Topology Triangle at the University of Manchester, 17/05/13

Prizes and Awards

- The Staples Trust, Frankopan Fund
 - Prestigious scholarship for postgraduate research in the UK, 2012-2015
- The Sir Richard Stapley Educational Trust
 - Awarded 2012/13
- Society for Industrial and Applied Mathematics (SIAM)
 - Math Matters, Apply it! Contest, The Math Behind...Alarm Redundancy Detection, 2nd Place, 2016
 - SIAM Student Travel Award 2014
- Award from the Chancellor of the University of Zagreb
 - Award for the best student paper in mathematics, 2007

Media

- A feature segment on Evolutionary Game Theory for the Croatian National TV science program "Third Element". <https://www.youtube.com/watch?v=od55jcCSq4Y&t=18m02s> [Croatian only]
- Interviewed by the science journalist Mr. Jaric-Dauenhauer for the article "Je li autor 'Jedača plamena' novi Tesla ili prodavač magle?" (English translation: Is the creator of the "Flame Eater" a new Tesla or a snake oil salesman?) on a case of scientific misconduct at the J.J. Strossmayer University in

Osijek. <https://www.tportal.hr/vijesti/clanak/je-li-autor-jedaca-plamena-novi-tesla-ili-prodavac-magle-20150121> [Croatian only].

Outreach activities

- Science Extravaganza #sciencex, Trafford Centre, Manchester, 2016
- Writing coach for MSc Students, University of Manchester, 2015
- Extended Qualifications Project (EPQ) developer, Manchester 2013 and 2014