Jason P. Smith

Personal

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Education

2012 – 2015 PhD in Combinatorics
Topic: "The Möbius Function and Topology of the Permutation Poset"
Advisor: Prof. Einar Steingrímsson
Department of Computer and Information Sciences, University of Strathclyde, Glasgow, UK

2008 – 2012 Undergraduate and Masters Degree in Mathematics, MMath
First Class Honours. University of Bath, Bath, UK

Academic Positions

2018 – Research Fellow
Department of Mathematics, University of Aberdeen, Aberdeen, UK
Project: Topological Analysis of Neural Systems (PI: Ran Levi)

2015 – 2018 Research Associate
Department of Computer and Information Sciences, University of Strathclyde, Glasgow, UK
Project: The Möbius Function of the Poset of Permutations (PI: Einar Steingrímsson)

Research Interests

Poset topology, focusing on shellability, Cohen-Macaulayness, connectivity and poset fibrations. Pattern posets, including posets of permutations, words, mesh patterns and graphs. Other combinatorial problems such as permutation patterns, distance preserving graphs, and combinatorial tableaux and their connections to the physics models.

Teaching Duties

Lecturer	CS103: Machines, Languages and Computation	University of Strathclyde
Teaching Assistant	CS110: Combinatorics For Computer Science 1	University of Strathclyde
Teaching Assistant	CS208: Logic And Algorithms	University of Strathclyde
Teaching Assistant	CS215: Combinatorics for Computer Science 2	University of Strathclyde

Additional Duties and Skills

- Member of the organising committee of the British Combinatorial Conference 2017.
- Reviewed articles for the combinatorics journals Annals of Combinatorics, Discrete Applied Mathematics and Journal of Combinatorial Theory, Series A.
- Member of the Edinburgh Mathematical Society.
- Author of a package in Sage applying discrete Morse theory to posets.
- Proficient using Java, GAP, LaTeX, Python and Sage.

Grants

2017	$560	MSRI Travel Fund to attend Geometric and Topological Combinatorics workshop.
2017	£3300	SICSA Postdoctoral and Early Career Researcher Exchange grant to visit Iceland.
2015	£220	Santander Universities Travel Award to attend Permutation Patterns 2015.
2014	$1240	Clay Institute Travel Grant to attend FPSAC 2014.
2014	£700	Strathclyde Travel Fund to attend Permutation Patterns 2014.

Presentations

Jun 2018	*Talk*	"A Poset of Graphs", British Mathematics Colloquium, University of St Andrews.
May 2018	*Talk*	"Poset Topology and the Poset of Graphs", Applied Topology Seminar, University of Aberdeen.
Sep 2017	*Talk*	"Pattern Posets and Poset Fibrations", Combinatorics Seminar, University of California, Berkeley.
Jul 2017	*Poster*	"Pattern Posets", *Formal Power Series and Algebraic Combinatorics 2017*, Queen Mary University, London.
Apr 2017	*Talk*	"The Permutation Pattern Poset", ICE-TCS Theory Day, Reykjavik University, Iceland.
Jul 2016	*Poster*	"On the Möbius Function and Topology of the Permutation Pattern Poset", *Formal Power Series and Algebraic Combinatorics 2016*, Simon Fraser University, Vancouver.
Jun 2016	*Talk*	"Pattern Posets: Möbius Function and Topology", *Permutation Patterns 2016*, Howard University, Washington DC.
Aug 2015	*Talk*	"Combinatorial Algebraic Topology and its Applications to Permutation Patterns", *Manchester Discrete Mathematics Seminar*, University of Manchester.
Jul 2014	*Talk*	"Intervals of Permutations with a Fixed Number of Descents are Shellable", *Permutation Patterns 2014*, East Tennessee State University.

Publication List

2018 "Permutation graphs, tiered trees and the Abelian sanpile model",
with Mark Dukes, Thomas Selig and Einar Steingrímsson, *in preparation*.

2018 "The Abelian sandpile model on Ferrers graphs – A classification of recurrent configurations",
with Mark Dukes, Thomas Selig and Einar Steingrímsson, preprint at *arXiv:1809.07728*.

2018 "The poset of graphs ordered by induced containment",
preprint at *arXiv:1806.01821*.

2018 "The poset of mesh patterns",
with Henning Ulfarsson, preprint at *arXiv:1802.08672*.

2018 "Modular decomposition of graphs and the distance preserving property",
with Emad Zahedi, preprint at *arXiv:1805.09853*.

2017 "EW-tableaux, Le-tableaux, tree-like tableaux and the Abelian sandpile model",
with Thomas Selig and Einar Steingrímsson, *The Electronic Journal of Combinatorics* 25: 3.14.

2017 "On the Möbius function and topology of general pattern posets",
preprint at *arXiv:1705.08676*.

2017 "On distance preserving and sequentially distance preserving graphs",
with Emad Zahedi, preprint at *arXiv:1701.06404*.

2017 "A formula for the Möbius function of the permutation poset based on a topological decomposition",
Advances in Applied Mathematics, 91:98-114.

2016 "Intervals of permutations with a fixed number of descents are shellable",
Discrete Mathematics, 339(1):118-126.

2014 "On the Möbius function of permutations with one descent",
The Electronic Journal of Combinatorics 21: 2.11.