Aaron M. Dall

Contact Information

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Research Interests

Matroid theory and its interplay with discrete, polyhedral, and algebraic geometry as well as applications to high-energy physics.

Education

Universitat Politècnica de Catalunya (UPC)

Ph.D., February 2015

- Dissertation Topic: Geometry and combinatorics of matroids and arithmetic matroids
- Dissertation Title: "Matroids: h-vectors, zonotopes and Lawrence polytopes"
- Advisor: Julian Pfeifle

San Franscisco State University (SFSU)

M.A. in Mathematics, January 2009

- Thesis Topic: Realizing graph invariants as invariants of polyhedral complexes
- Thesis Title: "Flow and Tension Complexes"
- Advisor: Matthias Beck
- Cumulative Grade Point Average (GPA) 3.97

University of California at Berkeley (UCB)

B.A. in Mathematics, May 2005

- Distinction in general scholarship
- Honors each term
- Cumulative GPA 3.67

Awards and Honors

2010-2015
Graduate Research Grant, Ministerio de Ciencia e Innovación (MCINN)

2007-2008
2007-2008 ARCS Scholarship

Extended Professional Travel

Fall	2013	Visiting Researcher, Combinatorics Group, Universität Wien
Spring	2009	i-Winter DocCourse: Discrete and Computational Geometry, Centre de Recerca Matemàtica, Barcelona
Summer	2007	Methods for Discrete Structures (Pre)Doc Course: "Integer Points in Polyhedra", Freie Universität Berlin

Publications

1. A. Dall, *Matroids: h-vectors, zonotopes, and Lawrence polytopes,* Doctoral Dissertation, Universitat Politècnica de Catalunya, 2015. http://www.tdx.cat/handle/10803/286280
2. F. Breuer, A. Dall, M. Kubitzke, *Hypergraph Coloring Complexes,* Discrete Mathematics **312**(16), 2407-2420, 2012. arXiv:1104.0483
3. F. Breuer, A. Dall, *Bounds on the Coefficients of Tension and Flow Polynomials,* Algebraic Combinatorics **33**(3), 465-482, 2011. arXiv:1004.3470

4. F. Breuer, A. Dall, *Viewing counting polynomials as Hilbert Functions via Ehrhart theory,* 22nd International Conference on Formal Power Series and Algebraic Combinatorics (FPSAC 2010). DMTCS, 413-424, 2010. arXiv:0911.5109

Preprints

1. A. Dall, *Internally Perfect Matroids,* submitted to The Electronic Journal of Combinatorics (December 2015), arXiv:1510.04532
2. A. Dall, J. Pfeifle, *A Polyhedral Proof of the Matrix Tree Theorem.* arXiv:1404.3876

Conference Talks

1. *A Polyhedral Proof of the Matrix Tree Theorem*, EuroGIGA Final Conference, Freie Universität Berlin. (February 2014)

Other Talks

1. Discrete Mathematics Seminar, Technische Universität Wien, Austria. (October 2013)
2. MORSAS seminar, Universitat Autònoma de Barcelona, Spain (October 2010)
3. Discrete Math Seminar, University of California, Berkeley, United States (March 2009)
4. Student Seminar, i-Math Winter School, Centre de Recerca Matemàtica, Barcelona, Spain (January 2009)

Teaching Experience

2005 - 2008	Lecturer, Algebra I, SFSU
2007 - 2008	Teaching Assistant, Calculus I and Multivariable Calculus, SFSU
Summer 2007	Teaching Assistant, Mini-course "Computing the continuous discretely", Freie Universität Berlin
Spring 2007	Teaching Assistant, Number Theory, SFSU
Spring 2007	Teaching Assistant, Beginning Proof, SFSU
Fall 2006	Teaching Assistant, Graduate Linear Algebra, SFSU

Graduate Coursework

- ❑ Real Analysis
- ❑ Topology
- ❑ Module Theory
- ❑ Graph Theory
- ❑ Group Representations (Coxeter Groups)
- ❑ Discrete Geometry
- ❑ Combinatorics and Commutative Algebra
- ❑ Projective Modules

References

Julian Pfeifle, Departament de Matemàtica Aplicada II , Universitat Politècnica de Catalunya , +34 93 413 77 14, email: `julian.pfeifle@upc.edu`

Raman Sanyal, Institut für Mathematik, Freie Universität Berlin,
email: `sanyal@math.fu-berlin.de`

Norbert Dall, Dall & Associates, Sacramento, California
email: `norbertdall@icloud.com`