

Department of Mathematical Sciences
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Date of birth: 07.05.1979
Place of birth: Arogno, Switzerland
Citizenship: Swiss
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Education

Ph.D. in Mathematics.

Thesis: *Combinatorics and topology of arrangement covers and of nested set complexes.*
Swiss Federal Institute of Technology, Zurich, Switzerland. Summer 2006.

Diploma in Mathematics with distinction (*mit Auszeichnung*).

Thesis: *On generalizing oriented matroids to a complex setting.*
Swiss Federal Institute of Technology, Zurich, Switzerland. Spring 2003.

Swiss Federal high school degree of literary type.

Collegio Papio, Ascona, Switzerland. Summer 1998.

Current position

Visiting Assistant Professor

State University of New York, Binghamton, NY, USA. January 2008 - present.

Previous positions

Postdoctoral fellow of the Mathematical Sciences Research Institute

Berkeley, CA, USA. August 2007 - December 2007.

Postdoc at University of Pisa, Italy

(Funded by a “Fellowship for prospective researchers”
of the Swiss National Science Foundation). October 2006 - August 2007.

Teaching assistant

Swiss Federal Institute of Technology, Zurich, Switzerland. July 2003 - July 2006.

Awards

Postdoctoral fellowship

of the Mathematical Sciences Research Institute April 2007

“Fellowship for prospective researchers”

Swiss National Science Foundation. July 2006.

Polyà-price for high score diploma degree.

Swiss Federal Institute of Technology, Zurich. May 2003.

Premio STS for best score high school degree.

Collegio Papio, Ascona, Switzerland. June 1998.

Publications

Research Papers

Shelling-type orderings of regular CW-complexes and acyclic matchings for the Salvetti Complex. 39pp., International Mathematics Research Notices (2008).

Nested set complexes of Dowling lattices and complexes of Dowling trees.
Journal of Algebraic Combinatorics **26** (2007), no. 4, 12pp.

Simplicial shellable spheres via combinatorial blowups. (joint with S. Čukić)
Proc. Amer. Math. Soc. **135** (2007), no. 8, 2403–2414 (electronic).

Preprints

Combinatorial polar orderings and follow-up arrangements (joint with S. Settepanella).
18 pp., ArXiv:0711.1517.

Combinatorics of covers of complexified arrangements.
26pp., to appear in the Lecture Notes of the 2007 CIMPA Summer School on Arrangements, Local Systems and Singularities.

Combinatorial remarks on a classical theorem of Deligne.
9pp., ArXiv math.CO/0611759.

Subdivision of complexes of k -trees.
9pp., ArXiv math.CO/0509378.

Diagram models for the covers of the Salvetti complex.
23pp., ArXiv math.AT/0409036.

Theses

Topology and combinatorics of arrangement covers and of nested set complexes.
PhD thesis, 156pp., ETH Zurich.

On generalizing Oriented Matroids to a Complex Setting.
Diploma thesis, 48pp., ETH Zurich.

Didactics and divulgation

Forme, trasformazioni e topologia (joint with G. Gaiffi and L. Pernazza, in preparation).
To appear in Quaderni della Settimana Matematica, Università di Pisa. 67 pp.

“+&c.” (joint with M. D. Froidcoeur)
Bollettino dei docenti di matematica 55 (2007). Edited by Centro Didattico Cantonale, Bellinzona, Switzerland. 15pp.

Giochi e passatempi: alla ricerca di problemi e soluzioni (joint with G. Gaiffi and L. Pernazza).

Quaderni della Settimana Matematica 1, a cura del Dipartimento di Matematica, Università di Pisa, August 2007. 64pp.

All publications available at: <http://www.math.binghamton.edu/delucchi/>

Selected talks and conferences

- Invited talk at the 2nd Seasonal Institute of the Mathematical Society of Japan on Arrangements of Hyperplanes.
Hokkaido University, Sapporo, Japan. Upcoming, August 1-13, 2009.
- Talk at the conference in honor of Peter Orlik.
Fields Institute, Toronto, Canada. August 19-23, 2008.
Title: *On the combinatorics of minimal complexes for complexified arrangements.*
- Workshop *Computational Algebraic Topology*.
Mathematisches Forschungsinstitut Oberwolfach, Germany. June 29 - July 04, 2008.
- Talk at the Spring Southeastern Meeting of the A. M. S.
Louisiana State University, Baton Rouge, LA. March 28-30, 2008.
Title: *Discrete Morse Theory for complexified Hyperplane arrangements.*
- Talk at the seminar of Discrete Mathematics Representation Theory
University of California at Davis, Davis, CA.
Title: *Hyperplane arrangements "cut to the bone"*. November 19, 2007.
- Seminar talk at the program on Geometric Group Theory
MSRI, Berkeley, CA. October 12, 2007.
Title: *When Mr. Artin leaves.*
- Talk at the conference *Combinatorial and Computational Algebraic Topology*,
a "Minisymposium" of the annual meeting of the German Mathematical Society.
Humboldt University, Berlin, Germany. March 26-30, 2007.
- Talk at the conference *Formal Power Series and Algebraic Combinatorics (FPSAC) 2007*.
Nankai University, Tjanjin, China, July 02-06, 2007.
Title: *Nested set complexes of Dowling lattices and complexes of Dowling trees.*
- CIMPA Summer school on arrangements and local systems.
Galatasaray University, Istanbul, Turkey. June 11-22, 2007.
- Talk at the 58th *Séminaire lotharingien de combinatoire*.
Domaine des Hautannes, Saint Germain au Mont d'Or, Lyon, France. March 19-21, 2007.
Title: *Combinatorial remarks on a classical theorem of Deligne.*
- Talk at the workshop *Recent developments in arrangements and configuration spaces*.
Mathematical Sciences Research Institute, Berkeley, CA, USA. August 07-11, 2006.
Title: *"A note on Deligne's proof and the strong lattice property"*.
- Talk at the Institute for Operations Research.
ETH Zurich, Switzerland. March 02, 2006.
Title: *"Bounding instability of motion planning algorithms
- an application of algebraic topology."*

- Talk at the *Séminaire doctorants*.
IRMA, University of Strasbourg, France. February 09, 2006.
Title: “*Le problème du $K(\pi, 1)$ pour les arrangements d’hyperplans*”.
- Talk at the *Oberseminar Geometrie*.
University of Stuttgart, Germany. January 11, 2006.
Title: “*Das $K(\pi, 1)$ -Problem für Arrangements von Hyperebenen*”.
- Euroconference *Algebraic and geometric combinatorics*.
Anogia, Crete, Greece. August 20-26, 2005.
- Talk at the conference *Arrangements of Hyperplanes - Algebra, Combinatorics, Geometry and Topology*.
Centro Stefano Franscini, Ascona, Switzerland. May 15-20, 2005.
Title: “*Subdivision of complexes of k -trees*”.
- Conference *Trends in Topological Combinatorics*.
KTH Stockholm, Sweden. February 14-16, 2005.
- Visitor at the special semester on arrangement theory.
MSRI, Berkeley, CA, USA. August-September 2004
- Talk at *Geometry, Topology, and Combinatorics*,
a Satellite Conference of the 4th European Congress of Mathematics
KTH Stockholm, Sweden July 03-06, 2004.
Title: “*Diagram models for the covers of the Salvetti complex*”.
- Talk at the workshop *Arrangements and combinatorial stratifications*.
Centro E. De Giorgi, Pisa, Italy March 22-24, 2004.
Title: “*Diagram models for the covers of the Salvetti complex*”.
- Talk at the special session on *Geometry and Combinatorics*.
AMS National Meeting, Phoenix, AZ. January 07-10, 2004.
Title: “*Diagram models for the covers of the Salvetti complex*”.
- Workshop on arrangement theory.
Northern Arizona University, Flagstaff AZ, USA. January 03-06, 2004.
- Miniworkshop *Combinatorial stratifications in algebra and topology*.
Mathematisches Institut Oberwolfach, Oberwolfach, Germany. November 02-08, 2003.

Teaching experience

- Undergraduate Calculus III and undergraduate Combinatorics class,
SUNY Binghamton, Binghamton, NY, USA. Spring 2008 - present.
- Twice instructor at the *Studienwoche mathematik*.
Mini-“research” workshop for High school students.
Swiss Federal Institute of Technology, Zurich, Switzerland. September 10-15, 2007
and June 02-07, 2008

Numeri. Lecture on basic number theory.
S.S.I.S. Toscana, University of Pisa, Italy. March - July, 2007.

Tutor at the workshop on game theory held at the third *settimana matematica* for last-year high school students.
University of Pisa, Italy. February 05-08, 2007.

Exercise classes in Algebraic Topology.
University of Pisa, Italy. Fall 2006.

Exercise classes in Geometry, Linear Algebra, Discrete Mathematics, Statistics, Complex Analysis.
ETH Zurich, Switzerland. Fall 2000 - Summer 2006.

Language skills

Italian: native.

French: very good, spoken and written.

German: very good, spoken and written.

English: very good, spoken and written.