

# CURRICULUM VITÆ

## DAVID CIMASONI

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Born: December 2, 1975

Citizenship: Swiss

Civil status: Married, two children (born 2017 and 2018)

Languages: French (native), English (fluent), German (good), Greek (basic).

### Education

06/2002: PHD IN MATHEMATICS – Université de Genève.

02/1998: MSc IN MATHEMATICS – Université de Genève.

### Employment

Since 09/2010: MAITRE D'ENSEIGNEMENT ET DE RECHERCHE – Université de Genève.

09/2007–08/2010: HEINZ HOPF LECTURER – ETH Zurich.

01/2007–05/2007: LECTURER – UC Berkeley.

09/2005–08/2007: SNF POSTDOCTORAL FELLOW – UC Berkeley.

09/2003–08/2004: SNF POSTDOCTORAL FELLOW – IRMA (Strasbourg) & IMB (Dijon).

1998–2005: TEACHING ASSISTANT – Université de Genève.

### Teaching

2018–2020: Algèbre I.

2017–2018: Théorie des noeuds, Topologie générale, Géométrie différentielle.

2016–2017: Chapitres choisis de géométrie, Topologie générale, Géométrie différentielle.

2015–2016: Topologie générale, Géométrie différentielle, The dimer and Ising models.

2014–2015: Algèbre et Géométrie III, Théorie de l'homologie, Géométrie différentielle.

2013–2014: Géométrie I, Chapitres choisis de géométrie.

2012–2013: Géométrie I, Cohomologie.

2011–2012: Géométrie I, Surfaces de Riemann.

2010–2011: Géométrie I, Topologie algébrique.

2009–2010: Algebra I, Algebra II.

2008–2009: Cohomology and Homotopy, Topologie, Seminar über Polytope.

2007–2008: Algebraic Topology, Knot Theory.

Spring 2007: Complex Analysis.

### Fellowships, Awards, Visiting positions

- 09/2012–08/2017: Funding from the SNF for two doctoral students.  
 06/2015–07/2015: Visiting Professor at the UPMC, Paris.  
 09/2005–08/2007: Advanced Research Fellowship from the SNF.  
 10/2004: Prix Vacheron Constantin.  
 09/2003–08/2004: Research Fellowship from the SNF.  
 08/2000–12/2000: Grants M. L. Anliker and Marc Birkigt.

### Conference and seminar organisation

- June 2017: Conference *Swiss Knots 2017* in Bern, with Sebastian Baader, Peter Feller, Lukas Lewark and Paul Turner.  
 June 2015: Conference *Swiss Knots 2015* in Geneva, with Sebastian Baader and Paul Turner.  
 April 2013: Conference *Swiss Knots 2013* in Bern, with Sebastian Baader, Pierre Dehornoy and Paul Turner.  
 March 2009: Conference *Swiss Knots 2009* in Fribourg, with Sebastian Baader, Ruth Kellerhals, Paul Turner and Van Quach Hongler .  
 Since 2010: Geneva *Séminaire de Topologie et Géométrie*, with Rinat Kashaev, Paul Turner and Van Quach Hongler.  
 2007-2010: ETHZ *Algebra-Topology Seminar*, with Sebastian Baader, Karin Baur, Alessandra Iozzi and Emmanuel Kowalski.  
 Spring 2007: UC Berkeley *Topology Seminar*, with Michael Hutchings, Rob Kirby and Peter Teichner.  
 1998-2002: Geneva Graduate Student Seminar – the so-called *Poulpor Seminar*, with Mathieu Baillif.

### Selected talks

- 11/2020: Mini-workshop on Dimers, Ising and spanning trees, Oberwolfach.  
 02/2020: Séminaire DIMERS, ENS, Paris.  
 02/2018: Conference Knotted Embeddings in Dimensions 3 and 4, CIRM, Marseille.  
 09/2017: Minicourse at the DGD Summer School, TU Berlin.  
 06/2017: Random Geometry Conference, Cambridge University.  
 11/2016: Séminaire Géométrie et Systèmes Dynamiques, Université de Bourgogne, Dijon.  
 06/2016: Quantum Topology Conference, Steklov Institute, Moscow.  
 04/2016: Séminaire Topologies, Université de Montpellier.  
 10/2015: Topology Seminar, Oxford University.  
 06/2015: Les probas du vendredi, Université Pierre et Marie Curie, Paris.  
 04/2015: Mathematisches Kolloquium, Universität Bern.  
 06/2014: Séminaire de Topologie, Institut Fourier, Grenoble.  
 05/2014: Probability Seminar, Warwick University.  
 02/2014: Minicourse at Winterbraids IV, Université de Bourgogne, Dijon.  
 10/2013: SFB Colloquium, Technische Universität Berlin.  
 06/2013: Minicourses on Random Geometry, University of Helsinki.  
 02/2013: Two-Dimensional statistical mechanics conference, Les Diablerets.  
 10/2012: Geometric Topology Seminar, MPI Bonn.  
 10/2012: Geometry Seminar, ETH Zurich.  
 03/2012: Institute of Theoretical Computer Science, ETH Zurich.

## PhD students

09/2013–12/2017: Mounir Benheddi, *Khovanov homology of torus links: structure and computations* (co-direction with Paul Turner).

09/2014–10/2017: Anthony Conway, *Invariants of colored links and generalizations of the Burau representation*.

09/2013–08/2017: Anh Minh Pham, *The dimer and Ising models on non-orientable surfaces*.

## Master and Bachelor students

Since 2010, Geneva: Ali Abdallah, Ruth Ben Zion, Mounir Benheddi, Anh Minh Pham, Robin Delabays, Kleopatra Zacharova, Solenn Estier, Thibault Grangier, Livio Ferretti, Gaëtan Simian.

2007–2010, ETH Zurich: Benjamin Gehrig, Jens Hinrichsen, Luca Matasci, Benny Löffel, Alex Maier, Pascal Rolli, Marco Läubli, Benjamin Miesch, Florian Naef, Eric Schaanning.

## Administrative and editorial positions

Since 09/2015: *Academic advisor* of the Mathematics Department, Université de Genève.

Since 10/2011: Member of the editorial board of *L'Enseignement Mathématique*.

## Publications

### Preprints

- [1] Graph coverings and twisted operators (with Adrien Kassel), *December 2020*.
- [2] The dimer and Ising models on Klein bottles, *October 2020*.
- [3] Elliptic dimers on minimal graphs and genus 1 Harnack curves (with Cédric Boutilier and Béatrice de Tilière), *July 2020*.
- [4] Isoradial immersions (with Cédric Boutilier and Béatrice de Tilière), *December 2019*.

### Refereed articles

- [5] Topological complexity of photons paths in biological tissues (with Tiziano Binzoni and Fabrizio Martelli), *J. Opt. Soc. Am. A* **36**(11), 1883–1891 (2019).
- [6] The topological hypothesis for discrete spin models (with Robin Delabays), *J. Stat. Mech. Theory Exp.* (2019), 033216, 17 pp.
- [7] Identities between dimer partition functions on different surfaces (with Anh Minh Pham), *J. Stat. Mech. Theory Exp.* (2016), 103101, 22 pp.
- [8] A Burau-Alexander 2-functor on tangles (with Anthony Conway), *Fund. Math.* **240** (2018), 51–79.
- [9] Splitting numbers and signatures (with Anthony Conway and Kleopatra Zacharova), *Proc. Amer. Math. Soc.* **144** (2016), 5443–5455.
- [10] Revisiting the combinatorics of the 2D Ising model (with Dmitry Chelkak and Adrien Kassel), *Ann. Inst. Henri Poincaré D*, **4** (2017), 309–385.

- [11] Colored tangles and signatures (with Anthony Conway), *Math. Proc. Cambridge Philos. Soc.* **164** (2018), 493–530.
- [12] Link Floer homology categorifies the Conway function (with Mounir Benheddi), *Proc. Edinburgh Math. Soc.* **59** (2016), 813–836.
- [13] Kac-Ward operators, Kasteleyn operators, and s-holomorphicity on arbitrary surface graphs, *Ann. Inst. Henri Poincaré D* **2** (2015), 113–168.
- [14] The critical temperature for the Ising model on doubly periodic graphs (with Hugo Duminil-Copin), *Electron. J. Probab.* **18** (2013), 1–18.
- [15] The critical Ising model via Kac-Ward matrices, *Comm. Math. Phys.* **316** (2012), 99–126.
- [16] Discrete Dirac operators on Riemann surfaces and Kasteleyn matrices, *J. Eur. Math. Soc.* **14** (2012), 1209–1244.
- [17] A generalized Kac-Ward formula, *J. Stat. Mech. Theory Exp.* (2010), P07023.
- [18] Dimers on graphs in non-orientable surfaces, *Lett. Math. Phys.* **87** (2009), 149–179.
- [19] Dimers on surface graphs and spin structures. II (with Nicolai Reshetikhin), *Comm. Math. Phys.* **281** (2008), 445–468.
- [20] Generalized Seifert surfaces and signatures of colored links (with Vincent Florens), *Trans. Amer. Math. Soc.* **360** (2008), 1223–1264.
- [21] Dimers on surface graphs and spin structures. I (with Nicolai Reshetikhin), *Comm. Math. Phys.* **275** (2007), 187–208.
- [22] A generalization of several classical invariants of links (with Vladimir Turaev), *Osaka J. Math.* **44** (2007), 1–31.
- [23] Slicing Bing doubles, *Algebr. Geom. Topol.* **6** (2006), 2395–2415.
- [24] A Lagrangian representation of tangles II (with Vladimir Turaev), *Fund. Math.* **190** (2006), 11–27.
- [25] A Lagrangian representation of tangles (with Vladimir Turaev), *Topology* **44** (2005), 747–767.
- [26] The Conway potential function of a splice, *Proc. Edinburgh Math. Soc.* **48** (2005), 61–73.
- [27] Studying the multivariable Alexander polynomial by means of Seifert surfaces, *Bol. Soc. Mat. Mexicana (3)* **10** (2004), 107–115.
- [28] Long Line Knots (with Mathieu Baillif), *Arch. Math.* **83** (2004), no. 1, 70–80.
- [29] The Conway potential function of a graph link, *Math. Proc. Cambridge Philos. Soc.* **136** (2004), 557–563.
- [30] The Alexander module of links at infinity, *Int. Math. Res. Not.* (2004), no. 20, 1023–1036.
- [31] A geometric construction of the Conway potential function, *Comment. Math. Helv.* **79** (2004), 124–146.
- [32] L’homologie de Novikov des entrelacs de Waldhausen. *C. R. Acad. Sci. Paris Sér. I Math.* **333** (2001), 939–942.
- [33] Computing the writhe of a knot, *J. Knot Theory Ramifications* **10** (2001), 387–395.

## Theses

- [34] Alexander invariants of multilinks, *PhD Thesis*, University of Geneva (2002).
- [35] Calcul du writhe d’un noeud, *MSc Thesis*, University of Geneva (1998).