

Éric COLIN de VERDIÈRE

Born in May 1977 in Paris
Married, four children
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Research Interests

At the interface between computer science and mathematics: algorithms and combinatorics mixed with topology and geometry. More specifically, computational topology and geometry, graph algorithms, combinatorial optimization.

Employment

2004–... CNRS researcher (section 07; CR1 since 2008) at École normale supérieure, Paris (ENS)
2001–2004 *Allocation couplée* (research and teaching grant for Ph.D. preparation) at ENS
1997–2001 Student at ENS

Education and Diploma

Apr. 2004 *Qualification* for *maître de conférences* position, in sections 25, 26, and 27
Dec. 2003 Ph.D. in Algorithms of University Paris 7, prepared at the Computer Science Department of ENS.
Advisor: Michel Pocchiola
2000 *DEA* (advanced graduate class) in Algorithms of University Paris 7
1997–1999 Studies of Mathematics at ENS: *Licence* (B.A.), *Maîtrise* (M.S.), *Agrégation* (national competitive exam for recruiting teachers)
July 1997 Admission at ENS (Mathematics section), rank 6. Also admitted at École Polytechnique
July 1995 *Baccalauréat* (Scientific section)

Awards

Ph.D. thesis award of *Association Française d'Informatique Fondamentale*
Accessit of Ph.D. thesis award of *Specif (Société des Personnels Enseignants-Chercheurs en Informatique de France)*

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Publications (Each paper is listed only once, even if it appeared in multiple versions.)

Journal Articles

- [1] Sergio Cabello, Éric Colin de Verdière, and Francis Lazarus. Finding cycles with topological properties in embedded graphs. *SIAM Journal on Discrete Mathematics*, to appear.
- [2] Éric Colin de Verdière and Alexander Schrijver. Shortest vertex-disjoint two-face paths in planar graphs. *ACM Transactions on Algorithms*, 7(2), Article No. 19, 2011.
Preliminary version in *Proceedings of the 25th Annual International Symposium on Theoretical Aspects of Computer Science (STACS)*, pages 181–192, 2008.
- [3] Éric Colin de Verdière and Jeff Erickson. Tightening non-simple paths and cycles on surfaces. *SIAM Journal on Computing*, 39(8):3784–3813, 2010.
Preliminary version in *Proceedings of the 17th Annual ACM-SIAM Symposium on Discrete Algorithms (SODA)*, pages 192–201, 2006.

- [4] Erin W. Chambers, Éric Colin de Verdière, Jeff Erickson, Sylvain Lazard, Francis Lazarus, and Shripad Thite. Homotopic Fréchet distance between curves — or, walking your dog in the woods in polynomial time. *Computational Geometry: Theory and Applications*, 43:295–311, 2010.
Invited to special issue of this journal after preliminary version (under slightly different title) in *Proceedings of the 24th Annual ACM Symposium on Computational Geometry (SOCG)*, p. 101–109, 2008.
- [5] Erin W. Chambers, Éric Colin de Verdière, Jeff Erickson, Francis Lazarus, and Kim Whittlesey. Splitting (complicated) surfaces is hard. *Computational Geometry: Theory and Applications*, 41(1–2):94–110, 2008.
Invited to special issue of this journal after preliminary version in *Proceedings of the 22nd Annual ACM Symposium on Computational Geometry (SOCG)*, pages 421–429, 2006.
- [6] Éric Colin de Verdière and Francis Lazarus. Optimal pants decompositions and shortest homotopic cycles on an orientable surface. *Journal of the ACM*, 54(4):Article No. 18, 2007.
Preliminary version in *Proceedings of the 11th Annual Symposium on Graph Drawing (GD)*, volume 2912 of *Lecture Notes in Computer Science*, pages 478–490, 2003.
- [7] Pierre Alliez, Éric Colin de Verdière, Olivier Devillers, and Martin Isenburg. Centroidal Voronoi diagrams for isotropic surface remeshing. *Graphical Models*, 67(3):204–231, 2005.
Invited to special issue of this journal after preliminary version in *Proceedings of the International Conference on Shape Modelling and Applications (SMI)*, pages 49–58, 2003.
- [8] Éric Colin de Verdière and Francis Lazarus. Optimal system of loops on an orientable surface. *Discrete & Computational Geometry*, 33(3):507–534, 2005.
Preliminary version in *Proceedings of the 43rd Annual IEEE Symposium on Foundations of Computer Science (FOCS)*, pages 627–636, 2002.
- [9] David Cohen-Steiner, Éric Colin de Verdière, and Mariette Yvinec. Conforming Delaunay triangulations in 3D. *Computational Geometry: Theory and Applications*, 28(2–3):217–233, 2004.
Invited to special issue of this journal after preliminary version in *Proceedings of the 18th Annual ACM Symposium on Computational Geometry (SOCG)*, pages 199–208, 2002.
- [10] Éric Colin de Verdière, Michel Pocchiola, and Gert Vegter. Tutte’s barycenter method applied to isotopies. *Computational Geometry: Theory and Applications*, 26(1):81–97, 2003.
Invited to special issue of this journal after preliminary version in *Abstracts for the 13th Canadian Conference on Computational Geometry (CCCG)*, pages 57–60, 2001.

Articles in International Conferences with Refereing (when no journal version is available)

- [11] Éric Colin de Verdière. Shortest cut graph of a surface with prescribed vertex set. In *Proceedings of the 18th European Symposium on Algorithms (ESA), part 2*, volume 6347 of *Lecture Notes in Computer Science*, pages 100–111, 2010.
- [12] Sergio Cabello, Éric Colin de Verdière, and Francis Lazarus. Output-sensitive algorithm for the edge-width of an embedded graph. In *Proceedings of the 26th Annual ACM Symposium on Computational Geometry (SOCG)*, pages 147–155, 2010.
Invited and submitted to special issue of *Computational Geometry: Theory and Applications*.
- [13] Sergio Cabello, Éric Colin de Verdière, and Francis Lazarus. Finding shortest non-trivial cycles in directed graphs on surfaces. In *Proceedings of the 26th Annual ACM Symposium on Computational Geometry (SOCG)*, pages 156–165, 2010.

Other Publications (omitting conferences without selection, internship reports, and technical reports)

- [14] Alexandre Boulch, Éric Colin de Verdière, and Atsuhiko Nakamoto. Irreducible triangulations of surfaces with boundary. Submitted to journal. ArXiv preprint 1103.5364 [math.CO], 2011.
- [15] Éric Colin de Verdière, Grégory Ginot, and Xavier Goaoc. Helly numbers of acyclic families. Submitted to journal. ArXiv preprint 1101.6006 [math.CO], 2011.

- [16] Éric Colin de Verdière. Algorithms for graphs on surfaces. Course notes, 2008–2011. Available at <http://www.di.ens.fr/~colin/cours/algo-graphs-surfaces.pdf>.
- [17] Éric Colin de Verdière. *Raccourcissement de courbes et décomposition de surfaces*. Ph.D. thesis, University Paris 7, December 2003.
 Referees: Herbert Edelsbrunner, Günter Rote, Marie-Françoise Roy.
 Examiners: Christian Choffrut (chair), Christiane Frougny, Michel Pocchiola (advisor), Günter Rote, Marie-Françoise Roy, and Brigitte Vallée.

Presentations

Invited Talks at Math. or CS Departments

LIAFA, Université Paris 7 (Jan. 2011) – Clermont-Ferrand (May 2010) – Inria Nancy (May 2009) – LIRMM, Montpellier (Dec. 2008) – École normale supérieure de Lyon (Dec. 2008) – Clermont-Ferrand (Oct. 2006) – University of Illinois at Urbana-Champaign, USA (Nov. 2005) – Ljubljana, Slovenia (May 2005) – Inria Nancy (Oct. 2004) – CWI, Amsterdam, Netherlands (Apr. 2004) – LRI, Orsay (Apr. 2004) – EHESS, Paris (Nov. 2003) – Univ. Bourgogne (Nov. 2003) – Combinatorics Seminar of Univ. Paris 6 (June 2003) – CS Laboratory, Marseille (Mar. 2003) – Inria Sophia-Antipolis (Apr. 2002) – CS Students seminar of ENS (Jan. 2002) – University of Groningen, Netherlands (July 2000) – Inria Lorraine (Feb. 2000)

Main Conference and Workshop Presentations, on Invitation

Journées Graphes et Algorithmes (1-hour plenary talk, Marseille, Nov. 2010) – SIAM Symposium on Discrete Mathematics (Austin, USA, June 2010)

Other Conference and Workshop Presentations

Workshop on Triangulations (Inria Sophia-Antipolis, Dec. 2010) – European Symposium on Algorithms (ESA) (Liverpool, UK, Sep. 2010) – ACM Symposium on Computational Geometry (SOCG) (Snowbird, USA, June 2010) – Subdivide and Tile (Leiden, Netherlands, Nov. 2009, poster presentation) – Symposium on Theoretical Aspects of Computer Science (STACS) (Bordeaux, Feb. 2008) – Journées de Géométrie Algorithmique (Le Bessat, Jan. 2006) – ACM-SIAM Symposium on Discrete Algorithms (SODA) (Miami, USA, Jan. 2006) – Géométrie Algorithmique et Discrète (Paris, Oct. 2005) – Spécif workshop (Clermont-Ferrand, Jan. 2005) – Géométrie Algorithmique et Discrète (Marne-la-Vallée, Sep. 2004) – International Symposium on Graph Drawing (Perugia, Italy, Sep. 2003) – Journées Graphes et Algorithmes (Dijon, Apr. 2003) – Autour de l’Homotopie (Paris, Mar. 2003) (2 talks) – Journées Nationales de Calcul Formel (Marseille, Jan. 2003) – Journées du GDR ALP (Paris, Jan. 2003) – IEEE Symposium on Foundations on Computer Science (FOCS) (Vancouver, Canada, Nov. 2002) – ECG workshop (Inria Sophia-Antipolis, Oct. 2002) – Journées de Géométrie Algorithmique (Obernai, Oct. 2002) – European Workshop on Computational Geometry (EuroCG) (Warsaw, Poland, Oct. 2002) – Journées de Géométrie Algorithmique (Masgrangeas, Oct. 2001) – ECG workshop (Leiden, Netherlands, Oct. 2001) – ARC “3D visibility” (Paris, Sep. 2001) – Canadian Conference on Computational Geometry (CCCG) (Waterloo, Canada, Aug. 2001) – Journées de Géométrie Algorithmique (Marseille, Oct. 2000) – ARC “Géométrica” (Paris, Feb. 2000) – Planar Maps CGAL days (Inria Sophia-Antipolis, Nov. 1999)

Long Visits (each of at least two weeks)

2005–2006	2 visits of 2 weeks at University of Illinois at Urbana-Champaign (UIUC), work with Jeff Erickson
2004	6-month visit at CWI Amsterdam (Netherlands), work with Alexander Schrijver
2000	2-week visit at INRIA Sophia-Antipolis, work with David Cohen-Steiner and Mariette Yvinec
2000	3-month internship at University of Groningen (Netherlands), work with Gert Vegter
1999	3-month programming internship at Inria Nancy, work with Sylvain Lazard and Sylvain Petitjean

Cooperation Projects

- 2009–2010 Coordinator, with Sergio Cabello, of a bilateral project *Algorithms for Graphs on Surfaces (Partenariat Hubert Curien)*
- 2007–2010 Participant of the *Triangles* project (*New Challenges in Triangulations*), funded by ANR (National Research Agency). Coordinator: Olivier Devillers
- 2005–2008 Participant of the *GeoTopAl* project (*Topology, Differential Geometry, and Algorithms*), funded by ANR. Coordinator: Frédéric Chazal
- 2005–2007 Coordinator, with Jeff Erickson, of a project *Optimization Problems in Computational Topology*, funded by CNRS, INRIA, and University of Illinois at Urbana-Champaign
- 2000–2004 Participant of the European project *ECG (Effective Computational Geometry for Curves and Surfaces)*
- 1999–2000 Participant of the ARC project *Visibilité 3D*
- 1999–2000 Participant of the ARC project *Géométrica (Axiomatization of Geometric Algorithms)*

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Teaching

At ENS or within *Master Parisien de Recherche en Informatique (MPRI)*:

- 2008–2012 12 hours/year lecture on *Algorithms for graphs on surfaces* (5th-year level) (9 hours the first year)
- 2006–2008 20 hours/year exercise sessions on Discrete and Computational Geometry (4th-year level)

At University Paris 7:

- 2003–2004 28 hours exercise sessions on Unix and Automata at level *DEUG MIAS 2* (2nd-year level)
- 2002–2004 56 hours exercise sessions on Algorithms at level *Licence* (3rd-year level) of Computer Science
- 2002–2003 3 hours lecture on Computational Topology of Surfaces at level *DEA* (5th-year level) Algorithms
- 2002–2003 42 hours exercise and lab sessions in Mathematics at level *IUP 1* (1st-year level)
- 2001–2002 80 hours exercise and lab sessions in Computer Science at level *DEUG MIAS 1* (1st-year level)

Other:

- 2000–2001 47 hours oral exam in Mathematics for students in *classes préparatoires* (1st and 2nd-year level) in a private institute
- 1998–1999 30 hours oral exam in Mathematics in *classes préparatoires MPSI* (1st-year level)

Students Supervised

- 2011–... Arnaud de Mesmay, Ph.D. student, co-advised with Jean Ponce
- 2011 Arnaud de Mesmay, *M2* (pre-doctoral) 4.5-month internship
- 2010 Alexandre Boulch, *M1* 5-month internship
- 2011 Nicolás Matte Bon and Florent Urrutia, *M1* in Mathematics, co-advised with Pierre Pansu, 5 months
- 2010 Floriane Dardard and Damien Garreau, *M1* in Mathematics, co-advised with Pierre Pansu, 5 months
- 2009 Nathanaël François and David Gontier, *M1* in Mathematics, co-advised with Pierre Pansu, 5 months
- 2008 Preyas Popat, *L3* 2-month internship
- 2008 Arnaud de Mesmay and Michaël Monerau, *M1* in Mathematics, co-advised with Pierre Pansu, 5 months
- 2007 Laurent Jouhet, *M2* (pre-doctoral) 5-month internship
- 2004–... *Tuteur* (informal advisor) for a few students at ENS

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Dissertation Committees

- 2010 Manuel Caroli, Ph.D., Nice
- 2009 Jean-Marie Favreau, Ph.D., Clermont-Ferrand

Program Committee Membership, Refereeing, and Reviewing

Program Committee membership:

- 2011 ACM Symposium on Computational Geometry (SOCG), Paris
- 2009 ACM-SIAM Symposium on Discrete Algorithms (SODA), New York
- 2008 Computational Topology in Image Context (CTIC), Poitiers

Referee for: SIAM Journal on Computing (2) – Discrete & Computational Geometry (2) – Computational Geometry: Theory and Applications (5) – Algorithmica (1) – Discrete Optimization (1) – Theory of Computing Systems (1) – Computer Aided Geometric Design (1) – IEEE Transactions on Visualization and Computer Graphics (1) – 3 book chapters

External reviewer for: ACM Symposium on Computational Geometry (SOCG) 2002, 2006, 2008, 2009, 2010 (9) – ACM-SIAM Symposium on Discrete Algorithms (SODA) 2007, 2010, 2011, 2012 (5) – Symposium on Theoretical Aspects of Computer Science (STACS) 2007, 2008, 2009, 2010 (6) – European Symposium on Algorithms (ESA) 2009, 2010 (3) – Conference on Real Numbers and Computers (RNC) 2006 (1) – Eurographics 2011 (1) – SIAM Conference on Geometric and Physical Modeling 2011 (1)

External reviewer for two projects submitted to *Agence nationale de la recherche* (2008, 2009) and one project for the French Ministry of Foreign and European Affairs (2010)

Organization of Scientific Events

- 2010 Organization of the *French Computational Geometry Week* in Marseille (with Boris Thibert)
- 2005 Organization at ENS of a workshop of the project *Optimization Problems in Computational Topology*

Various Committees

- 2011 Member of the hiring committee of University Nancy 1, section 27
- 2009–2010 Examiner for entrance exams to ENS (Computer Science, written part)
- 2010 Member of the hiring committee of ENS, section 27
- 2008–... Member of the laboratory committee
- 2007,2009 Member of the hiring committee of University Nancy 2, section 27
- 2007 Member of the hiring committee of ENS, section 27 (substitute)

Miscellaneous

- 2007–... Webmaster of `www.di.ens.fr`

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