

Arnaud de Mesmay

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Born on December 21st, 1988
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FORMATION

- 2015-Present** *Gipsa-Lab*, Saint-Martin d'Hères : Permanent researcher (Chargé de recherche) at CNRS.
- 2014-2015** *IST Austria*, Vienna : Post-doc in the groupe of Uli Wagner, with an ISTFELLOW fellowship (Marie Curie COFUND).
- 2011-2014** *École normale supérieure* (ENS), Paris : PhD thesis : “Topics in Low Dimensional Computational Topology” under the supervision of Éric Colin de Verdière. Date of defense : July 7, 2014.
- Awarded with the best mention *Très honorable avec félicitations du jury*.
 - Reviewers :
 - Frédéric Chazal (CS, INRIA Saclay - Île de France)
 - Jeff Erickson (CS, University of Illinois at Urbana-Champaign, USA)
 - Eric Sedgwick (CS, DePaul University, USA)
 - Examiners :
 - Cyril Gavoille (CS, Université de Bordeaux)
 - Pierre Pansu (Math, Université Paris-Sud)
 - Jorge Ramirez-Alfonsin (Math, Université Montpellier 2)
 - Monique Teillaud (CS, INRIA Sophia-Antipolis - Méditerranée)
- 2010-2011** *École normale supérieure* (ENS), Paris : *Parisian Masters of Research in Computer Science (MPRI)*, awarded with the best mention, ranked first.
- 2009-2010** *École normale supérieure* (ENS), Paris : *Masters in Mathematical Logic and Foundations of Computer Science*, University Paris VII, awarded with the best mention.
- 2007-2009** *École normale supérieure* (ENS), Paris : Undergraduate studies in Mathematics and Computer Science (Licence, Master 1 and *Agrégation* (ranked 5th)).
- 2005 - 2007** Preparatory years for the nationwide competitive examination to the elite French *Grandes Écoles* for scientific studies (France's leading schools of science and engineering). Admitted into all of these schools.

PUBLICATIONS

Articles in refereed journals

- [J6] *Finding non-orientable surfaces in 3-manifolds* with Benjamin A. Burton and Uli Wagner. *Discrete and Computational Geometry*, Volume 58, Issue 4, 871–888, 2017.
- [J5] *Shortest path embeddings of graphs on surfaces* with Alfredo Hubard, Vojtěch Kaluža and Martin Tancer. *Discrete and Computational Geometry*, Volume 58, Issue 4, 921–945, 2017.
- [J4] *On the Complexity of Immersed Normal Surfaces*, with Benjamin Burton and Éric Colin de Verdière. *Geometry & Topology*, Volume 20, 1061-1083, 2016.
- [J3] *Discrete systolic inequalities and decompositions of triangulated surfaces*, with Éric Colin de Verdière and Alfredo Hubard. *Discrete and Computational Geometry*, April 2015, Volume 53, Issue 3, pp 587–620.
- [J2] *Testing graph isotopy on surfaces*, with Éric Colin de Verdière. *Discrete and Computational Geometry*, January 2014, Volume 51, Issue 1, Pages 171–206.
- [J1] *Dimension reduction for finite trees in ℓ_1* , with James R. Lee and Mohammad Moharrami. *Discrete and Computational Geometry*, December 2013, Volume 50, Issue 4, Pages 977–1032.

Articles in proceedings of flagship conferences

- [C11] *Minimizing Intersections of Curves on Surfaces via Local Moves*, with Hsien-Chih Chang, Jeff Erickson, David Letscher, Saul Schleimer, Eric Sedgwick, Dylan Thurston and Stephan Tillmann. *Proceedings of the Twenty-Ninth Annual ACM-SIAM Symposium on Discrete Algorithms (SODA)*, 2018.
- [C10] *The Bane of Low-Dimensionality Clustering*, with Vincent Cohen-Addad, Eva Rotenberg and Alan Roytman. *Proceedings of the Twenty-Ninth Annual ACM-SIAM Symposium on Discrete Algorithms (SODA)*, 2018.
- [C9] *On the complexity of optimal homotopies*, with Erin Wolf Chambers and Tim Ophelders. *Proceedings of the Twenty-Ninth Annual ACM-SIAM Symposium on Discrete Algorithms (SODA)*, 2018.
- [C8] *Embeddability in R^3 is NP-hard*, with Yo'av Rieck, Eric Sedgwick and Martin Tancer. *Proceedings of the Twenty-Ninth Annual ACM-SIAM Symposium on Discrete Algorithms (SODA)*, 2018.
- [C7] *A Near-Linear Approximation Scheme for Multicuts of Embedded Graphs with a Fixed Number of Terminals*, with Vincent Cohen-Addad and Éric Colin de Verdière. *Proceedings of the Twenty-Ninth Annual ACM-SIAM Symposium on Discrete Algorithms (SODA)*, 2018.
- [C6] *Finding non-orientable surfaces in 3-manifolds*, with Benjamin A. Burton and Uli Wagner. *Proceedings of the 32nd International Symposium on Computational Geometry (SOCG)*, 2016. Conference version of [J6].
- [C5] *Shortest path embeddings of graphs on surfaces*, with Alfredo Hubard, Vojtěch Kaluža and Martin Tancer. *Proceedings of the 32nd International Symposium on Computational Geometry (SOCG)*, 2016. Conference version of [J5].
- [C4] *A fixed parameter tractable approximation scheme for the optimal cut graph of a surface*, with Vincent Viallat Cohen-Addad. *Proceedings of the 23rd Annual European Symposium on Algorithms (ESA)*, 2015.
- [C3] *Discrete systolic inequalities and decompositions of triangulated surfaces*, with Éric Colin de Verdière and Alfredo Hubard. *Proceedings of the 30th Annual Symposium on Computational Geometry (SOCG)*, ACM, pages 335–344, 2014. Conference version of [J3].
- [C2] *Testing graph isotopy on surfaces*, with Éric Colin de Verdière. *Proceedings of the Twenty-Eighth Annual Symposium on Computational Geometry (SOCG)*, ACM, pages 141–150, 2012. Conference version of [J2].
- [C1] *Dimension reduction for finite trees in ℓ_1* , with James R. Lee and Mohammad Moharrami. *Proceedings of the Twenty-Third Annual ACM-SIAM Symposium on Discrete Algorithms (SODA)*, pages 43-50, 2012. Conference version of [J1].

Other reviewed publications

- [O2] *Nœuds, mouvements de Reidemeister et algorithmes (d'après Lackenby)*, in French. Séminaire Bourbaki, Astérisque, Société Mathématique Française. To appear.

— [O1] De la carte au territoire? with Éric Colin de Verdière. *Images des Mathématiques*, CNRS, 2014. Vulgarization article around *Testing graph isotopy on surfaces*.

PRESENTATIONS

International venues

- ACM-SIAM Symposium on Discrete Algorithms, New Orleans, USA (2018).
- Computation in Geometric Topology, Warwick, UK (2017).
- Foundations of Computational Mathematics, Barcelona, Spain (2017).
- Symposium on Computational Geometry, Boston, USA (2016).
- Computational Geometric and Algebraic Topology, Oberwolfach, Germany (2015).
- European Symposium on Algorithms, Patras, Greece (2015).
- ACM Symposium on Computational Geometry, Kyoto, Japan (2014).
- European Workshop on Computation Geometry, Ein Gedi, Israel (2014).
- ACM Symposium on Computational Geometry, Chapel Hill, North Carolina, USA (2012).
- Summer school on Analysis and Geometry in the Theory of Computation, Bloomington, Indiana, USA (2009).

Conferences in France

- Astonishing Workshop, Nancy (2017).
- Journées ANR GATO, Paris (2017).
- Conférence SIGMA, Luminy (2017).
- Séminaire Bourbaki, Paris (2016).
- Journées Graphes et surfaces, Grenoble (2016).
- Journées de Géométrie Algorithmique, Cargèse (2015).
- Journée du GDR-IM, Bordeaux (2015).
- Journées de Géométrie Algorithmique, Luminy (2013).
- Journées Complexité et Algorithmes, Université Paris 7 (2013).
- École Jeunes Chercheurs en Informatique Mathématique, Université de Perpignan (2013).
- Journées de Géométrie Algorithmique, Cluny (2012).

Invited talks at Math or CS Seminars

- EADS Seminar, University of Copenhagen, Denmark (2017).
- Séminaire de Géométrie Algorithmique, Collège de France, Paris, France (2017).
- Geometry and Topology Seminar, IST Austria, Austria (2017).
- DATASHAPE Seminar, INRIA Sophia-Antipolis, France (2016).
- Discrete Mathematics seminar, Charles University, Prague, Czech republic (2016).
- Séminaire de Théorie spectrale et Géométrie, Institut Fourier, Grenoble, France (2016).
- Computational and Combinatorial Geometry Seminar, Institut Henri Poincaré, France (2015).
- GT Combi du LIX, Ecole Polytechnique, Palaiseau, France (2015).
- Images et Signal Seminar, Gipsa-Lab, Grenoble, France (2015).
- Geometry and Topology Seminar, IST Austria, Austria (2014).
- Séminaire Complexité et Algorithmes du LIAFA, Paris, France (2014).
- Geometry Processing, Shapes and Images Workgroup, Saclay, France (2014).
- Pure Mathematics Seminar, University of Queensland, Australia (2012).

GRANTS

2018

PI of the *COMP3D* project, funded by INS2I.

- 2017-2018** Participant of the *EMBEDS2* Czech-French collaboration, funded by a PHC Barandes. PIs : Xavier Goaoc and Martin Tancer.
- 2016-2020** Participant of the *GATO* project, funded by ANR. PI : Francis Lazarus

LONG VISITS

- 2013** 2-months visit to Nati Linial in Jerusalem, Israel at the Hebrew University.
- 2012** 18-days visit to Benjamin Burton in Brisbane, Australia at the University of Queensland.
- 2010** 5-months internship with James R. Lee in Seattle, USA at the University of Washington.

TEACHING

- 2016-2018** Masters course in *Computational Topology* at ENS Lyon, co-taught with Francis Lazarus.
<http://www.gipsa-lab.fr/~francis.lazarus/Enseignement/compuTopo.html>
- 2011-2014** Teaching assistant (192h) at the University Paris VII (Denis Diderot). Courses : Introduction to programming, Data types and objects, Automata.

SUPERVISION

- 2017** Research internship of Victor Wang (MIT/Princeton), co-advised with Francis Lazarus.
- 2017** M2 internship of Quentin Lisack (ENSIMAG), co-advised with Francis Lazarus.
- 2016** L3 internships of Nicolas Pinson (ENS Lyon) and Hugo Manet (ENS), co-advised with Francis Lazarus.
- 2015** Graduate *rotation* of Bernhard Kragl (IST Austria), co-advised with Uli Wagner.

SERVICE

- *Program Committee* : SOCG 2017.
- *Conferences* : External reviewer for SOCG 2013, 2014, 2016 and 2018, MFCS 2014, ICALP 2015, SODA 2016 and 2018, GD 2016, ESA 2016 and 2017, SIGGRAPH 2018, STACS 2018, STOC 2018.
- *Journals* : Reviewer for Journal of the ACM, Discrete and Computational Geometry, Journal of Applied and Computational Topology, Journal of Computational Geometry, Discrete Mathematics and Theoretical Computer Science as well as for MathSciNet and the special issue Journey Through Discrete Mathematics, A Tribute to Jiri Matousek.