

Curriculum Vitae

Archontia C. Giannopoulou

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Personal Information

First Name: Archontia
Last Name: Giannopoulou
Father's Name: Charalampos
Mother's Name: Foteini
Gender: Female
Date of Birth: January 1, 1986
Nationality: Hellenic

Contact Information

Work address: Technische Universität Berlin
Institut für Softwaretechnik und Theoretische Informatik
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Research Interests

Graph Algorithms Parameterized, Exact, and Approximation.

Parameterized Algorithms and Complexity Kernelization, Sub-exponential Algorithms, Structural Parameterizations, Lower Bounds.

Structural Graph Theory Graph Minors, Graph Decompositions, Graph Parameters, Graph Classes, Erdős-Pósa Properties, Graph Searching.

Work Experience

April 2016 - now: Research Associate of the LaS¹ Group, Institute for Software Engineering and Theoretical Computer Science, Technische Universität Berlin, Germany.

February 2015 - January 2016: Post-doctoral Fellow, Faculty of Mathematics, Informatics and Mechanics, University of Warsaw, Poland (supported by WCMCS²).

January 2014 - January 2015: Research Associate of the ACiD³ Group, School of Engineering and Computing Sciences, Durham University, UK.

December 2012 - November 2013: Researcher, Department of Informatics, University of Bergen, Norway.

Studies

March 2010 - October 2012 PhD in *Partial Orderings and Algorithms on Graphs*, Department of Mathematics, National and Kapodistrian University of Athens (UoA).
Supervisor: Dimitrios M. Thilikos.
Awarded on April 16, 2013.

October 2007 - June 2009 M.Sc. Graduate Program in Logic, Algorithms and Computation⁴.
M.Sc. Thesis: *Tree-depth of Graphs: Characterisations and Obstructions*.
Advisor: Dimitrios M. Thilikos.
Awarded on July 21, 2009.

September 2003 - October 2007 B.Sc. in Mathematics.
National and Kapodistrian University of Athens.
Awarded on February 22, 2008.

Distinctions

- Excellent Paper Award from IPEC 2016.
- 3-year scholarship for PhD studies from the Special Account for Research Grants of the National and Kapodistrian University of Athens, Greece
- Exceptional Academic Performance, $\mu\text{Π}\lambda\forall$, 2007 - 2008 (ranked 1st)

¹Logic and Semantics.

²Warsaw Center of Mathematics and Computer Science.

³Algorithms and Complexity in Durham.

⁴ $\mu\text{Π}\lambda\forall$.

Papers

- **Published** (or accepted for publications to journals or conference proceedings) (19)

Journals (9)

- Title: *Uniform Kernelization Complexity of Hitting Forbidden Minors.*
Authors: Archontia C. Giannopoulou, Bart M. P. Jansen, Daniel Lokshtanov, and Saket Saurabh.
Journal: ACM Trans. Algorithms 13, 3, Article 35 (March 2017), 35 pages.
[An extended abstract of a preliminary version of this paper has appeared in the proceedings of ICALP 2015. Conference proceedings: ICALP (1) 2015: 629-641.]
- Title: *Tree Deletion Set Has a Polynomial Kernel but No $OPT^{O(1)}$ Approximation.*
Authors: Archontia C. Giannopoulou, Daniel Lokshtanov, Saket Saurabh, and Ondrej Suchý.
Journal: SIAM J. Discrete Math. 30(3): 1371-1384 (2016).
[An extended abstract of a preliminary version of this paper has appeared in the proceedings of FSTTCS 2014. Conference proceedings: FSTTCS 2014: 85-96.]
- Title: *New Geometric Representations and Domination Problems on Tolerance and Multitolerance Graphs.*
Authors: Archontia C. Giannopoulou and George B. Mertzios.
Journal: SIAM J. Discrete Math. 30(3): 1685-1725 (2016).
[An extended abstract of a preliminary version of this paper has appeared in the proceedings of STACS 2015. Conference proceedings: STACS 2015: 354-366.]
- Title: *Computing Tree-depth Faster Than 2^n .*
Authors: Fedor V. Fomin, Archontia C. Giannopoulou, and Michał Pilipczuk.
Journal: Algorithmica 73(1): 202-216 (2015).
[An extended abstract of a preliminary version of this paper has appeared in the proceedings of IPEC 2013. Conference proceedings: IPEC 2013: 137-149.]
- Title: *Forbidding Kuratowski Graphs as Immersions.*
Authors: Archontia C. Giannopoulou, Marcin Kamiński, and Dimitrios M. Thilikos.
Journal: Journal of Graph Theory 78(1): 43-60 (2015).
- Title: *Effective Computation of Immersion Obstructions for Unions of Graph Classes.*
Authors: Archontia C. Giannopoulou, Iosif Salem, and Dimitris Zoros.
Journal: J. Comput. Syst. Sci. 80(1): 207-216 (2014).
[An extended abstract of a preliminary version of this paper has appeared in the proceedings of SWAT 2012. Conference proceedings: SWAT 2012: 165-176.]

- Title: *Optimizing the Graph Minors Weak Structure Theorem.*
7. Authors: Archontia C. Giannopoulou and Dimitrios M. Thilikos.
Journal: SIAM J. Discrete Math. 27(3): 1209-1227 (2013).
[This paper has been presented in the 2nd Workshop on Graph Decompositions: Theoretical, Algorithmic and Logical Aspects, October 18 - 22, 2010, titled “Fast Trinity Lemma”.]
- Title: *LIFO-search: A Min-max Theorem and a Searching Game for Cycle-rank and Tree-depth.*
8. Authors: Archontia C. Giannopoulou, Paul Hunter, and Dimitrios M. Thilikos.
Journal: Discrete Applied Mathematics 160(15): 2089-2097 (2012).
[An extended abstract of a preliminary version of this paper titled “A min-max theorem for LIFO-search” has been published in the Electronic Notes in Discrete Mathematics, 2011. Conference proceedings: Electronic Notes in Discrete Mathematics 38: 395-400 (2011).]
- Title: *Forbidden Graphs for Tree-depth.*
9. Authors: Zdeněk Dvořák, Archontia C. Giannopoulou, and Dimitrios M. Thilikos.
Journal: Eur. J. Comb. 33(5): 969-979 (2012).
[An extended abstract of a preliminary version of this paper titled “Obstructions for Tree-depth” has been published in the Electronic Notes in Discrete Mathematics, 2009. Conference proceedings: Electronic Notes in Discrete Mathematics 34: 249-253 (2009).]

Conference proceedings that have not yet been published in a journal (10)

- Title: *Matching Connectivity: Matching Connectivity: On the Structure of Graphs with Perfect Matchings*
1. Authors: Archontia C. Giannopoulou, Stephan Kreutzer, and Sebastian Wiederrecht.
Conference: To appear in the proceedings of EUROCOMB 2017.
- Title: *Neighborhood Complexity and Kernelization for Nowhere Dense Classes of Graphs.*
2. Authors: Kord Eickmeyer, Archontia C. Giannopoulou, Stephan Kreutzer, O-joung Kwon, Michał Pilipczuk, Roman Rabinovich, and Sebastian Siebertz.
Conference: To appear in the proceedings of ICALP 2017.
- Title: *Linear Kernels for Edge Deletion Problems to Immersion-closed Graph Classes.*
3. Authors: Archontia C. Giannopoulou, Michał Pilipczuk, Jean-Florent Raymond, Dimitrios M. Thilikos, and Marcin Wrochna.
Conference: To appear in the proceedings of ICALP 2017.
- Title: *Cutwidth: Obstructions and Algorithmic Aspects.*
4. Authors: Archontia Giannopoulou, Michał Pilipczuk, Jean-Florent Raymond, Dimitrios Thilikos, and Marcin Wrochna.
Conference: IPEC 2016: 15:1-15:13.

5. Title: *FPT Algorithms for Plane Completion Problems.*
 Authors: Dimitris Chatzidimitriou, Archontia C. Giannopoulou, Spyridon Maniatis, Clément Requilé, Dimitrios M. Thilikos, and Dimitris Zoros.
 Conference: MFCS 2016: 26:1-26:13.
6. Title: *Packing and Covering Immersion Models of Planar Subcubic Graphs.*
 Authors: Archontia Giannopoulou, O-Joung Kwon, Jean-Florent Raymond and Dimitrios Thilikos.
 Conference: WG 2016: 74-84.
7. Title: *Polynomial Fixed-Parameter Algorithms: A Case Study for Longest Path on Interval Graphs.*
 Authors: Archontia C. Giannopoulou, George B. Mertzios, and Rolf Niedermeier.
 Conference: IPEC 2015: 102-113.
8. Title: *The Structure of W_4 -immersion-free Graphs.*
 Authors: Rémy Belmonte, Archontia C. Giannopoulou, Daniel Lokshantov, and Dimitrios M. Thilikos.
 Conference: ICGT 2014.
9. Title: *Excluding Graphs as Immersions in Surface Embedded Graphs.*
 Authors: Archontia C. Giannopoulou, Marcin Kamiński, and Dimitrios M. Thilikos.
 Conference: WG 2013: 274-285.
10. Title: *New Lower Bound on Max-Cut of Hypergraphs with an Application to r -SET SPLITTING.*
 Authors: Archontia C. Giannopoulou, Sudeshna Kolay, and Saket Saurabh.
 Conference: LATIN 2012: 408-419.

Research Visits

- University of Warsaw, Department of Mathematics, Computer Science, and Mechanics, May 13 - 24, 2013 (Prof. Marcin Kamiński).
- Charles University in Prague, Department of Applied Mathematics, Classes of Combinatorial Objects: from Structure to Algorithms (CCOSA), October 1, 2011 - March 31, 2012 (Prof. Daniel Kral', mentor: Prof. Zdeněk Dvořák).
- University of Bergen, Institute of Informatics, Algorithms Research Group, May 15 - 21, 2011 (Prof. Fedor Fomin).
- Institute of Mathematical Sciences Chennai, Department of Theoretical Computer Science, February 2 - April 17, 2011 (Prof. Saket Saurabh).

- Goethe University Frankfurt am Main, Institute for Computer Science, October 11 - 17, 2010
(Prof. Isolde Adler).

Teaching Experience

As **main instructor**:

Parameterized Complexity and Algorithms (graduate course)
Graduate Program in Logic, Algorithms and Computation ($\mu\Pi\lambda\forall$),
Spring Semester **2015-2016**.

As **teaching assistant**:

Informatics I (undergraduate course),
Department of Mathematics, UoA, Winter Semester **2010-2011, 2009-2010**.

Graph Theory and Applications (undergraduate course),
Department of Mathematics, UoA, Winter Semester **2010-2011, 2009-2010**.

Informatics II (undergraduate course),
Department of Mathematics, UoA, Winter Semester **2009-2010**.

Recursive Functions (undergraduate course),
Department of Mathematics, UoA, Winter Semester **2009-2010**.

Computational Complexity (undergraduate course),
Department of Mathematics, UoA, Winter Semester **2009-2010**.

Mathematical Logic (graduate course), joint course in
Graduate Program in Logic, Algorithms and Computation ($\mu\Pi\lambda\forall$) and
Graduate Program in Pure Mathematics in the Department of Mathematics, UoA,
Spring Semester **2008-2009**.

Reviewer for the journals:

- Journal of Combinatorial Theory, Series B,
- SIAM Journal on Discrete Mathematics,
- Electronic Journal of Combinatorics,
- Algorithmica,
- European Journal of Combinatorics,
- Discrete Mathematics,
- Discrete Applied Mathematics, and
- Theoretical Computer Science.

Reviewer for the Conferences:

- ACM-SIAM Symposium on Discrete Algorithms (SODA),
- International Colloquium on Automata, Languages and Programming (ICALP),
- European Symposium on Algorithms (ESA),
- International Symposium on Theoretical Aspects of Computer Science (STACS),
- International Workshop on Graph-Theoretic Concepts in Computer Science (WG),
- International Symposium on Parameterized and Exact Computation (IPEC),
- International Conference on Current Trends in Theory and Practice of Computer Science (SOFSEM),
- Latin American Theoretical Informatics Symposium (LATIN),
- International Symposium on Fundamentals of Computation Theory (FCT),
- International Workshop on Combinatorial Algorithms (IWOCA),
- International Conference on Algorithmic Aspects in Information and Management (AAIM), and
- International Conference on Algorithms and Complexity (CIAC).

Participation in Conferences and Workshops (24)

Participation to invitation-only workshops and seminars (15)

GRASTA 2017: 8th workshop on GRAPh Searching, Theory & Applications, April 10–13, 2017, Anogia, Crete, Greece.

GROW 2015: 7th Workshop on Graph Classes, Optimization, and Width Parameters, October 11 - 15, 2015, Aussois, France.

Title of talk: *Fixed Parameter Algorithms for Completion Problems on Planar Graphs.*

Algorithmic Graph Theory on the Adriatic Coast, June 16 - 19, 2015, UP FAMNIT, Koper, Slovenia.

Title of talk: *Uniform Kernelization Complexity of Hitting Forbidden Minors.*

CIRM workshop on Graph decompositions, January 19 - 23, 2015, Centre International de Rencontres Mathématiques, Marseille, France.

Title of talk: *Uniform Kernelization Complexity of Hitting Forbidden Minors.*

Dagstuhl Seminar 14071: Graph Modification Problems, February 9 - 14, 2014, Schloss Dagstuhl - Leibniz-Zentrum für Informatik, Wadern, Germany.

Title of talk: *Polynomial kernel for Tree Deletion Set.*

GROW 2013: Workshop on Graph Classes, Optimization, and Width Parameters, October 9 - 11, 2013, Santorini, Greece.

WorKer 2013: Workshop on Kernelization, April 9 - 12, 2013, University of Warsaw, Warsaw, Poland.

Dagstuhl Seminar 13121: Bidimensional Structures: Algorithms, Combinatorics and Logic, March 17 - 22, 2013, Schloss Dagstuhl - Leibniz-Zentrum für Informatik, Wadern, Germany.

Title of talk: *Exclusion Theorems for Immersions on Surface Embedded Graphs.*

Perspectives in Discrete Mathematics, June 24 - 29, 2012, Centre de Recerca Matemàtica, Bellaterra, Spain⁵.

Title of poster: *Effective Computation of Immersion Obstructions for Unions of Graph Classes.*

Dagstuhl Seminar 12241: Data Reduction and Problem Kernels, June 10 - 15, 2012, Schloss Dagstuhl - Leibniz-Zentrum für Informatik, Wadern, Germany.

WorKer 2011: Workshop on Kernelization, September 2 - 4, 2011, Vienna University of Technology, Vienna, Austria.

Treewidth Workshop 2011, May 19 - 20, 2011, VilVite Center, Bergen, Norway.

WorKer 2010: Workshop on Kernelization, November 8 - 12, 2010, Lorentz Center, Leiden, Netherlands.

2nd Workshop on Graph Decompositions: Theoretical, Algorithmic and Logical Aspects, October 18 - 22, 2010, Centre International de Rencontres Mathématiques, Marseille, France.

Title of talk: *Fast Trinity Lemma.*

BWAG 2009: Bertinoro Workshop on Algorithms and Graphs, December 7 - 11, 2009, University Residential Center, Bertinoro, Italy.

Title of talk: *Forbidden Graphs for Tree-depth.*

Participation to conferences (9)

MFCS 2016: International Symposium on Mathematical Foundations of Computer Science, August 22 - 26, 2016, Krakow, Poland.

Title of talk: *FPT Algorithms for Plane Completion Problems.*

WG 2016: International Workshop on Graph-Theoretic Concepts in Computer Science, June 22 - 24, 2016, Istanbul, Turkey.

Title of talk: *Packing and Covering Immersion Models of Planar Subcubic Graphs.*

ALGO 2015, September 14 - 18, 2015, University of Patras, Patras, Greece.

WG 2013: International Workshop on Graph-Theoretic Concepts in Computer Science, June 19 - 21, 2013, Lübeck, Germany.

Title of talk: *Excluding Graphs as Immersions in Surface Embedded Graphs.*

SWAT 2012: 13th Scandinavian Symposium and Workshops on Algorithm Theory, July 4-6, 2012, University of Helsinki, Helsinki, Finland.

Title of talk: *Effective Computation of Immersion Obstructions for Unions of Graph Classes.*

⁵Participation with approval only.

EuroComb 2011: European Conference on Combinatorics, Graph Theory and Applications, August 29 - September 2, 2011, Erdős - Rényi Institute, Budapest, Hungary.

Title of talk: *A min-max Theorem for LIFO-Search.*

ACAC 2011: 6th Athens Colloquium on Algorithms and Complexity, August 25 - 26, 2011, National Technical University of Athens, Athens, Greece.

WG 2010: International Workshop on Graph-Theoretic Concepts in Computer Science, June 28 - 30, 2010, Zaros, Greece.

EuroComb 2009: European Conference on Combinatorics, Graph Theory and Applications, September 7 - 11, 2009, University of Bordeaux 1, Bordeaux, France.

Title of talk: *Obstructions for Tree-depth.*

Seminar Talks (9)

1. Host: Logic and Semantics Research Group, Institute for Software Engineering and Theoretical Computer Science, Technische Universität Berlin, Germany.
Seminar: Research Seminar on Current Topics of Logic and Algorithmic Graph Theory.
Title of talk: Packing and Covering Immersion Models of Planar Subcubic Graphs.
Date: 15th of June 2016.
2. Host: Faculty of Mathematics, Informatics, and Mechanics, University of Warsaw, Poland.
Seminar: ZAA Seminar.
Title of talk: Uniform Kernelization Complexity of Hitting Forbidden Minors.
Date: 26th of February 2015.
3. Host: Mathematics Institute, Warwick, UK.
Seminar: Combinatorics 2014-15.
Title of talk: New Geometric Representations and Domination Problems on Tolerance and Multitolerance Graphs.
Date: 5th of December 2014.
4. Host: Engineering and Computing Sciences, Durham University, UK.
Seminar: Computer Science Junior Seminars 2014/15.
Title of talk: Graph Minors and Algorithms.
Date: 12th of November 2014.
5. Host: Engineering and Computing Sciences, Durham University, UK.
Seminar: Computer Science Junior Seminars 2013/14.
Title of talk: Computing Tree-depth Faster Than 2^n .
Date: 3rd of March 2014.
6. Host: Institute of Informatics, University of Bergen, Norway.
Seminar: Algorithms seminar series.
Title of talk: Polynomial Kernel for Tree Deletion Set.
Date: 8th of November 2013.

7. Host: Institute of Informatics, University of Bergen, Norway.
Seminar: Algorithms seminar series.
Title of talk: Lifo-search on (Di)graphs.
Date: 14th of December 2012.
8. Host: Department of Applied Mathematics, Charles University, Czech Republic.
Seminar: Noon Seminar.
Title of talk: LIFO-search on Graphs and Digraphs.
Date: 10th of November 2011.
9. Host: Institute of Mathematical Sciences, Chennai, India.
Seminar: Parameterized Complexity Journal Club.
Title of talk: The Optimized Graph Minors Weak Structure Theorem and Algorithmic Applications.
Date: 3rd of March 2011.

Languages

Greek Native

English Cambridge Proficiency, Michigan Proficiency

Other Activites

- I was a member of the **organizing committee** of the 36th International Workshop on Graph Theoretic Concepts in Computer Science (**WG 2010**) and of the 6th workshop on Graph Classes, Optimization, and Width Parameters (**GROW 2013**).
- I attended CCOSA (Classes of Combinatorial Objects: from Structure to Algorithms) Fall School 2011, October 13 - 16, 2011, Beroun, Czech Republic.
- I attended NoNA Spring School on Algorithms, March 12 - 15, 2009, Istanbul, Turkey.