

# Irena Penev

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Date of birth: January 7, 1983  
Place of birth: Belgrade, Serbia  
Citizenship: Serbia

## Employment

### 2018-present

Assistant Professor  
Computer Science Institute of Charles University (IUUK), Prague, Czech Republic

### 2016-2018

Research Fellow in Graph Theory  
University of Leeds, School of Computing, Leeds, UK

Position funded by the EPSRC grant **Structure of Hereditary Graph Classes and Its Algorithmic Consequences**

Principal investigator: Kristina Vušković

### 2015-2016

Postdoctoral Fellow  
Technical University of Denmark, Department of Applied Mathematics and Computer Science,  
Section AlgoLoG, Lyngby, Denmark

Position funded by the ERC Advanced Grant **GRACOL**

Principal investigator: Carsten Thomassen

### 2013–2015

Labex MILYON Postdoctoral Fellow  
Université de Lyon, LIP (ENS de Lyon), Team MC2, Lyon, France

Supervisor: Nicolas Trotignon

## 2012–2013

Upper School Math Teacher  
Park Tudor School, Indianapolis, IN, USA

## Education

### 2006–2012

Columbia University, New York, NY, USA

- Ph.D. with distinction, Mathematics, May 2012

Dissertation: *Forbidden substructures in graphs and trigraphs, and related coloring problems* (<https://academiccommons.columbia.edu/catalog/ac:146465>)

Advisor: Maria Chudnovsky

- M.Phil., Mathematics, May 2009
- M.A., Mathematics, May 2007

### 2002–2006

Bryn Mawr College, Bryn Mawr, PA, USA

- A.B. *magna cum laude*, French and Mathematics (Mathematics major at Haverford College), May 2006

## Certificates

Russian: TORFL-III/C1 [*ТПКИ-III/C1*], July 2018

French: DALF C1, December 2017

## Research Interests

Graph theory (especially structural graph theory and graph algorithms)

## Papers

Published

1. “Stable sets in {ISK4, wheel}-free graphs” (with Martin Milanič and Nicolas Trotignon), *Algorithmica*, 80(2) (2018), 415–447.
2. “Graphs with no induced five-vertex path or antipath” (with Maria Chudnovsky, Louis Esperet, Laetitia Lemoine, Peter Maceli, and Frédéric Maffray), *Journal of Graph Theory*, 84(3) (2017), 221–232.
3. “Amalgams and  $\chi$ -boundedness”, *Journal of Graph Theory*, 84(1) (2017), 57–92.
4. “Isolating highly connected induced subgraphs” (with Stéphan Thomassé and Nicolas Trotignon), *SIAM Journal on Discrete Mathematics*, 30(1) (2016), 592–619.

5. “Perfect graphs with no balanced skew-partition are 2-clique-colorable”, *Journal of Graph Theory*, 83 (2016), 213–235.
6. “Perfect graphs of arbitrarily large clique-chromatic number” (with Pierre Charbit, Stéphan Thomassé, and Nicolas Trotignon), *Journal of Combinatorial Theory, Series B*, 116 (2016), 456–464.
7. “Substitution and  $\chi$ -boundedness” (with Maria Chudnovsky, Alex Scott, and Nicolas Trotignon), *Journal of Combinatorial Theory, Series B*, 103:5 (2013), 567–586.
8. “The structure of bull-free perfect graphs” (with Maria Chudnovsky), *Journal of Graph Theory*, 74 (2013), 1–31.
9. “Coloring bull-free perfect graphs”, *SIAM Journal on Discrete Mathematics*, 26 (3) (2012), 1281–1309.
10. “Excluding induced subdivisions of the bull and related graphs” (with Maria Chudnovsky, Alex Scott, and Nicolas Trotignon), *Journal of Graph Theory*, 71 (2012), 49–68.
11. “Fraenkel-Carnap questions for equivalence relations” (with George Weaver), *Australasian Journal of Logic*, 10 (2011), 52–66.
12. “Simple expansions of classes satisfying Fraenkel-Carnap properties” (with George Weaver), *Bulletin of the Section of Logic*, 39:3/4 (2010), 175–186.
13. “From finitary to infinitary second-order logic” (with George Weaver), *Mathematical Logic Quarterly*, 51 (2005), 499–506.

Submitted

1. “Clique-cutsets beyond chordal graphs” (with Valerio Boncompagni and Kristina Vušković), arXiv:1707.03252.
2. “The class of  $(P_7, C_4, C_5)$ -free graphs: decomposition, algorithms, and  $\chi$ -boundedness” (with Kathie Cameron, Shenwei Huang, and Vaidy Sivaraman), arXiv:1803.03315.

### Conference and Seminar Talks

10th International Colloquium on Graph Theory and Combinatorics (ICGT), Université Claude Bernard Lyon 1, Lyon, France, July 2018

DIMAP Seminar, University of Warwick, Coventry, UK, March 2018

Raziskovalni matematični seminar, University of Primorska, Koper, Slovenia, January 2018

Workshop on Graph Classes, Optimization, and Width Parameters (GROW), Fields Institute, Toronto, ON, Canada, October 2017

IX Latin and American Algorithms, Graphs and Optimization Symposium (LAGOS), CIRM, Marseille, France, September 2017

Structure in Graphs and Matroids (SiGMa), University of Waterloo, Waterloo, ON, Canada, July 2017

Southern Italian Workshop on Algorithms and Graphs, Polignano A Mare, Italy, September

2016

Coloring Graphs at the Technion, Haifa, Israel, July 2015

Algorithmic Graph Theory on the Adriatic Coast, Koper, Slovenia, June 2015

LIMOS Seminar, LIMOS, Clermont-Ferrand, France, February 2015

Rencontres internationales sur les méthodes de décomposition de graphes, CIRM, Marseille, France, January 2015

Séminaire Algorithmique distribuée et graphes, LIAFA, Paris, France, November 2014

Bordeaux Graph Workshop, Bordeaux, France, November 2014

Groupe de travail MC2, LIP, ENS de Lyon, Lyon, France, October 2014

STINT Workshop, Lans-en-Vercors, France, September 2014

Groupe de travail MC2, LIP, ENS de Lyon, Lyon, France, January 2014

Bertinoro Workshop on Algorithms and Graphs, Bertinoro, Italy, December 2013

Journées Graphes et Algorithmes, Orsay, France, November 2013

Séminaire de Mathématiques Discrètes, G-SCOP, Grenoble, France, October 2013

Séminaire Algorithmique distribuée et graphes, LIAFA, Paris, France, October 2013

Discrete Math Seminar, Columbia University, New York, NY, USA, February 2012

New York Combinatorics Seminar, CUNY, New York, NY, USA, October 2011

Discrete Math Seminar, Columbia University, New York, NY, USA, September 2011

Discrete Math Seminar, Princeton University, Princeton, NJ, USA, September 2010

Discrete Math Seminar, Columbia University, New York, NY, USA, April 2010

### **Teaching (in English unless specified otherwise)**

Instructor (School of Computing, University of Leeds)

- Graph Theory: Structure and Algorithms (Spring 2018, Spring 2017)

Instructor (Department of Mathematics, Columbia University)

- Calculus II (Spring 2012)
- Calculus I (Fall 2011)
- Linear Algebra (Summer 2011, Summer 2010)

- College Algebra (Spring 2009, Fall 2008)

Instructor (Science Honors Program, Columbia University)

- Graph Theory (Spring 2012, Fall 2011)

Teaching assistant [*Chargée de TD*], (Computer Science Department, ENS de Lyon; teaching in French)

- Probability [*L3 Probabilités*] (Spring 2015)
- Foundations of computer science and calculability [*L3 FDI - Fondement de l'Informatique / Calculabilité*] (Fall 2014)
- Logic [*L3 Logique*] (Spring 2014)

Teaching Assistant (Department of Mathematics, Columbia University)

- Ordinary Differential Equations (Spring 2011)
- Calculus IV (Spring 2010, Spring 2008)
- Linear Algebra (Fall 2010, Summer 2009, Summer 2008, Summer 2007)
- Analysis and Optimization (Fall 2009)
- Intro to Modern Analysis I (Summer 2009)
- Calculus III (Fall 2007, Summer 2007)

Undergraduate Teaching Assistant (Bryn Mawr College)

- Abstract Algebra II (Spring 2006)
- Discrete Mathematics (Fall 2005)
- Intro to Logic (Fall 2004, Fall 2003)

### Master's thesis supervision

- Kasper Szabo Lyngsie, *The 1,2,3 Conjecture and related problems* (co-supervised with Carsten Thomassen)

### Service

Organizer of the *Noon seminar*, KAM & IUUK, Charles University (2018–present)

Co-organizer of the *Séminaire Graphes et structures discrètes*, LIP, ENS de Lyon (2013–2015)

Referee for the following journals:

- *Algorithmica*
- *Applicable Analysis and Discrete Mathematics*
- *Combinatorica*
- *Discrete Applied Mathematics*

- *Discrete Mathematics*
- *European Journal of Combinatorics*
- *Graphs and Combinatorics*
- *Journal of Combinatorial Optimization*
- *Journal of Combinatorial Theory, Series B*
- *Journal of Graph Theory*
- *SIAM Journal on Discrete Mathematics*

Referee for the following conferences:

- Integer Programming and Combinatorial Optimization, 2016