

Personal Informations

name: Caterina
surname: Viola
title: Doctor rerum naturalium (Dr. rer. nat.)

Career and Education

from 01.03.2023 to 28.002.2026: Researcher (fixed-term type A)
Quantum Algorithms for Text Processing and Combinatorial Problems
UNIVERSITÀ DEGLI STUDI DI CATANIA – DIPARTIMENTO DI MATEMATICA E INFORMATICA, Catania (Italy)
Supervisor: Prof. Ph.D. Simone Faro

from 01.07.2022 to 31.01.2023: Postdoctoral Researcher
Symmetry in Computational Complexity
UNIVERZITA KARLOVA – FACULTY OF MATHEMATICS AND PHYSICS, Prague (Czech Republic)
Supervisor: Prof. Ph.D. Libor Barto

from 15.04.2020 to 30.06.2022: Senior Research Associate
Algorithms and Complexity Theory
UNIVERSITY OF OXFORD – DEPARTMENT OF COMPUTER SCIENCE, Oxford (United Kingdom)
Supervisor: Prof. Ph.D. Stanislav Živný

from 01.03.2016 to 31.03.2020: Doctoral Student in Mathematics
DFG research training group QUANTLA (Quantitative Logic and Automata)
TECHNISCHE UNIVERSITÄT DRESDEN – FAKULTÄT MATHEMATIK, INSTITUT FÜR ALGEBRA,
Dresden (Germany)
Supervisor: Prof. Dr. rer. nat. Manuel Bodirsky
note: Magna cum Laude

02.03.2015: Master Degree in Mathematics
UNIVERSITÀ DEGLI STUDI DI CATANIA – DIPARTIMENTO DI MATEMATICA E INFORMATICA , Catania (Italy)
note: 110/110 cum Laude

27.07.2012: Bachelor in Mathematics
UNIVERSITÀ DEGLI STUDI DI CATANIA – FACOLTÀ DI SCIENZE FISICHE E NATURALI, Catania (Italy)
note: 110/110 cum Laude

Doctoral Dissertation

Title: *Valued Constraint Satisfaction Problems over Infinite Domains*
Reviewers: Prof. Dr. rer. nat. Manuel Bodirsky, Technische Universität Dresden
Prof. Ph.D. Andrei Krokhin, Durham University
School: School of Science, Technische Universität Dresden
submission date: 18.02.2020
defence date: 17.06.2020

Master Thesis

Title: *Catenary degree, tame degree and ω -primality in embedding dimension three numerical semigroups*
Supervisor: Prof. Dr. Vincenzo Micale, Università degli Studi di Catania
Co-supervisor: Prof. Dr. Pedro A. García-Sánchez, Universidad de Granada

Research Interests

Quantum Algorithms, Valued Constraint Satisfaction Problems, Combinatorial Optimisation, Algorithms, Computational Complexity Theory, Cryptography, Logic in Computer Science, Universal Algebra, Graph Theory, Numerical Semigroups, Commutative Algebra, Number Theory

Publications

- [1] M. Bodirsky, M. Mamino, and C. Viola. **Piecewise Linear Valued Constraint Satisfaction Problems with Fixed Number of Variables**, pages 265–276. Springer International Publishing, 2021.
- [2] F. M. Schneider and C. Viola. **An application of Farkas’ lemma to finite-valued constraint satisfaction problems over infinite domains**. *Journal of Mathematical Analysis and Applications*, 517(1):126591, 2023.
- [3] C. Viola and S. Živný. **The Combined Basic LP and Affine IP Relaxation for Promise VCSPs on Infinite Domains**. *ACM Trans. Algorithms*, 17(3), July 2021.
- [4] M. Bodirsky, M. Mamino, and C. Viola. **Piecewise Linear Valued CSPs Solvable by Linear Programming Relaxation**. *ACM Trans. Comput. Logic*, 23(1), nov 2021.
- [5] C. Viola and S. Živný. **The combined basic LP and affine IP relaxation for promise VCSPs on infinite domains**. In *Proceedings of the 45th International Symposium on Mathematical Foundations of Computer Science (MFCS)*, 2020. Extended version available at arxiv.org/abs/2007.01779.
- [6] M. Bodirsky, M. Mamino, and C. Viola. **Submodular Functions and Valued Constraint Satisfaction Problems over Infinite Domains**. In *Proceedings of the 27th EACSL Annual Conference on Computer Science Logic (CSL)*, pages 12:1–12:22, 2018.
- [7] S. T. Chapman, P. A. García-Sánchez, Z. Tripp, and C. Viola. **Measuring primality in numerical semigroups with embedding dimension three**. *Journal of Algebra and its Applications*, 15(01):1650007, 2016.
- [8] P. A. García-Sánchez and C. Viola. **When the catenary degree meets the tame degree in embedding dimension three numerical semigroups**. *Involve, a Journal of Mathematics*, 8(4):677–694, 2015.

Teaching

01.05.2023-01.06.2023: Computer Science

UNIVERSITÀ DEGLI STUDI DI CATANIA – DIPARTIMENTO DI SCIENZE UMANISTICHE, Catania (Italia)

17.01.2021-13.03.2021: Tutorials for Computational Complexity Class

UNIVERSITY OF OXFORD – DEPARTMENT OF COMPUTER SCIENCE, Oxford (United Kingdom)

Organisation of Scientific Events

Organiser for CSP World Congress 2022 (CWC 2022) Molveno (Italy), September 18-24, 2022
<https://cwc.csp-seminar.org/>

Other Experiences

11.06.2018 - 30.07.2018: Research stay

UNIVERSITÉ PARIS-EST MARNE-LA-VALLÉE,
LABORATOIRE INFORMATIQUE GASPARD MONGE (LIGM) , Paris (France)

Supervisor: Dr. Johan Thapper

01.09.2015 - 30.09.2015: Internship

MAX PLANCK INSTITUT FÜR MATHEMATIK, Bonn (Germany)

Supervisor: Dr. Pieter Moree

09.02.2014 - 09.07.2014: European Llp Erasmus Program

UNIVERSIDAD DE GRANADA, Granada (Spain)

Investigation and redaction of Master Thesis

Supervisor: Prof. Dr. Pedro A. García-Sánchez

29.07.2013 - 30.08.2013: Summer School in Mathematics – Perugia 2013

SMI – SCUOLA MATEMATICA INTERUNIVERSITARIA, Perugia (Italy)

Courses attended and completed:

-Differential Geometry (Prof. Adriano Tomassini);

-Algebra (Prof. Nikolai Vavilov).

Given Talks

Piecewise Linear Valued Constraint Satisfaction Problems with Fixed Number of Variables

Cologne-Twente Workshop on Graphs and Combinatorial Optimization 2020 (CTW2020)

ONLINE, September 14-16, 2020

The combined basic LP and affine IP relaxation for promise VCSPs on infinite domains

CSP seminar ONLINE, September 9, 2020

video recording at https://youtu.be/RfgxEWOK_h0

The combined basic LP and affine IP relaxation for promise VCSPs on infinite domains

International Symposium on Mathematical Foundations of Computer Science (MFCS 2020)

ONLINE, August 24-28, 2020

video recording at <https://youtu.be/NcLCWkb2UkU>

Valued Constraint Satisfaction problems over Infinite Domains

KAFKA Seminars,

CHARLES UNIVERSITY, Prague (Czech Republic), March 11, 2020

Applying Farkas' Lemma to Infinite-Domain Valued CSPs

99th Workshop on General Algebra (AAA99),

UNIVERSITÀ DEGLI STUDI DI SIENA, Siena (Italy), February 21-23, 2020

Valued Constraint Satisfaction problems over Rational Domains

Algorithms and Complexity Theory Seminars,

UNIVERSITY OF OXFORD, Oxford (United Kingdom), October 17, 2019

The Power of Linear Programming for Infinite-Domain Valued Constraint Satisfaction Problems

QuantLa Workshop 2019, Stolpen (Germany), October 7-11, 2019

The Power of Linear Programming for Infinite-Domain Valued CSPs

98th Workshop on General Algebra (AAA98)

TECHNISCHE UNIVERSITÄT DRESDEN, Dresden (Germany), June 21-23, 2019

Piecewise Linear Functions and Valued Constraint Satisfaction Problems over Infinite Domains

QuantLa Workshop 2018, Meissen (Germany), August 28-31, 2018

Piecewise Linear Homogeneous Valued Constraint Satisfaction Problems

Logic Colloquium 2018 (LC2018)

UNIVERSITÀ DEGLI STUDI DI UDINE, Udine (Italy), July 23-28, 2018

Submodular Functions and Infinite Domain Valued Constraint Satisfaction Problems

Dagstuhl Seminar 18231, The Constraint Satisfaction Problem: Complexity and Approximability

SCHLOSS DAGSTUHL – LEIBNIZ-ZENTRUM FÜR INFORMATIK GMBH, Dagstuhl(Germany), June 3-8, 2018

Submodular Functions and Infinite Domain Valued Constraint Satisfaction Problems

96th Workshop on General Algebra (AAA96)

TECHNISCHE UNIVERSITÄT DARMSTADT, Darmstadt (Germany), June 1-3, 2018

A Maximally Tractable Class of VCSPs

QuantLa Research Seminar - Winter Term 2017-2018

TECHNISCHE UNIVERSITÄT DRESDEN, Dresden (Germany), October 24, 2017

Submodular Piecewise-Scalar Valued Constraint Satisfaction Problems

QuantLa Workshop 2017, Altenberg (Germany), September 18-22, 2017

Submodular Semilinear Valued Constraint Satisfaction Problems

QuantLa Research Seminar - Winter Term 2016/2017

UNIVERSITÄT LEIPZIG, Leipzig (Germany), November 29, 2016

Valued Semilinear Constraint Satisfaction Problems

QuantLa Workshop 2016, Krippen (Germany), September 19-23, 2016

Catenary and tame degree in embedding dimension 4 numerical semigroups

INdAM meeting: International meeting on numerical semigroups with applications (IMNS),

Levico Terme (Italy), July 4-8, 2016

When the catenary and tame degree meet in embedding dimension three

INdAM meeting: International meeting on numerical semigroups (IMNS),

Cortona (Italy), September 7-13, 2014

Other Conferences, Workshops, and Meetings Attended

Dagstuhl Seminar 22201, The Constraint Satisfaction Problem:

Complexity and Approximability

SCHLOSS DAGSTUHL – LEIBNIZ-ZENTRUM FÜR INFORMATIK GMBH, Dagstuhl(Germany),

May 15-20 2021

European Computer Science Summit 2021 (ECSS 2021)

Madrid (Spain), October 25-27, 2021. Online and On-Site Sessions

CSP World Congress 2021 (CWC 2021)

Kranjska Gora (Slovenia), September 26-October 2, 2021

101th Workshop on General Algebra (AAA 101)

UNIVERSITY OF NOVI SAD, Novi sad (Serbia), June 4-6, 2021. ONLINE

100th Workshop on General Algebra (AAA 100)

JAGIELLONIAN UNIVERSITY KRAKÓV, Kraków (Poland), February 5-7, 2021. ONLINE

Homogeneous Structures: Model Theory meets Universal Algebra

MATHEMATISCHES FORSCHUNGINSTITUT OBERWOLFACH, Oberwolfach (Germany), January 3-9, 2021

ONLINE

CSP World Congress 2020 (CWC 2020)

Völs am Schlern (Italy), September 20-26, 2020

Second Algebra Week

UNIVERSITÀ DEGLI STUDI DI SIENA, Siena (Italy), June 25-28, 2019

97th Workshop on General Algebra (AAA 97)

TECHNISCHE UNIVERSITÄT WIEN, Wien (Austria), March 1-3, 2019

27th EACSL Annual Conference on Computer Science Logic

(CSL 2018) UNIVERSITY OF BIRMINGHAM, Birmingham (United Kingdom), September 4-7, 2018

Dagstuhl Event 18223, Gemeinsamer Workshop der Graduiertenkollegs GRK 2167 und GRK 2193

SCHLOSS DAGSTUHL – LEIBNIZ-ZENTRUM FÜR INFORMATIK GMBH, Dagstuhl (Germany), May 27 – 30, 2018

94th Workshop on General Algebra, in conjunction with the 5th Novi Sad Algebraic Conference (AAA94+NSAC 2017)

UNIVERSITY OF NOVI SAD, Novi sad (Serbia), June 14-18, 2017

Logic Colloquium 2016 (LC 2016)

UNIVERSITY OF LEEDS, Leeds (United Kingdom), July 31-August 6, 2016

INdAM meeting: International meeting on numerical semigroups with applications (IMNS 2016)

Levico Terme (Italy), July 4-8, 2016

QuantLA Spring School 2016

Leipzig (Germany), May 17-20, 2016

Homology: Theoretical and Computational Aspects (HTCA 2015)

UNIVERSITÀ DEGLI STUDI DI GENOVA, Genova (Italy), February 9-13, 2015

Posters

Submodular Piecewise Linear Homogeneous Valued Constraint Satisfaction Problems

Dagstuhl Event 18223, Gemeinsamer Workshop der Graduiertenkollegs GRK 2167 und GRK 2193

SCHLOSS DAGSTUHL – LEIBNIZ-ZENTRUM FÜR INFORMATIK GMBH,
Dagstuhl(Germany), May 30-31, 2018

Valued Semi-Linear Constraint Satisfaction Problems

DFG Review Meeting for QuantLA

TECHNISCHE UNIVERSITÄT DRESDEN,
Dresden (Germany), May 30-31, 2016

Collaboration with Scientific Journals

Reviewer for **Journal of Computer and System Sciences (JCSS)**

Reviewer for **SIAM Journal on Discrete Mathematics (SIDMA)**

Reviewer for **Journal of Artificial Intelligence Research (JAIR)**