

# Roberta Bonacina

## Curriculum Vitae

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Born on September 20, 1992 in Italy

### Current position

2020–present **Postdoctoral researcher**, *Universität Tübingen*, Tübingen, Carl Friedrich von Weizsäcker Center.

### Education

2016–2019 **PhD in Computer Science and Computational Mathematics**, *Università degli Studi dell'Insubria*, Como, Department of Science and High Technology.

Thesis-title: *Semantics for Homotopy Type Theory*, Advisor: Dr. Marco Benini.

2014–2016 **Master in Mathematics**, *Università degli Studi dell'Insubria*, Como, Department of Science and High Technology.

Final grade 110/110 cum laude.

Thesis-title: *Point-Free Categorical Semantics for Martin-Löf Type Theory*, Advisor: Dr. Marco Benini.

2011–2014 **Bachelor in Mathematics**, *Università degli Studi dell'Insubria*, Como, Department of Science and High Technology.

Final grade 110/110 cum laude.

Thesis-title: *Presentazioni di gruppi*, Advisor: Dr. Valerio Monti.

2006–2011 **Scientific high school diploma**, *Liceo Scientifico Galileo Galilei*, Erba.

Final grade 100/100.

### Publications

#### Journal articles

2020 R. Bonacina, D. Wessel, *Ribenboim's order extension theorem from a constructive point of view*, *Algebra Universalis* (2020), 81:5.

2019 M. Benini, R. Bonacina, *Well-quasi orders in a categorical setting*, *Archive for Mathematical Logic* (2019), 58, pp 501–526.

#### Book chapters

To appear M. Benini, R. Bonacina, *Ad-Hoc Semantics to Study Structural Properties of Types*, K. Mainzer, H. Schwichtenberg, P. Schuster eds., *Proof and Computation*, World Scientific.

#### Conferences

2021 B. Ahrens, R. Bonacina, N. Kraus *Syntax for two-level type theory*, HoTT/UF 2021.

2021 R. Bonacina, B. Ahrens, *Syntax for two-level type theory*, TYPES 2021.

2020 M. Benini, R. Bonacina, *A proof-theoretical semantics for homotopy type theory*, HoTT/UF 2020.

2020 M. Benini, R. Bonacina, *Natural Numbers in Homotopy Type Theory*, TYPES 2020, Università di Torino.

#### Submitted

R. Bonacina, D. Wessel, *A formal approach to Menger's theorem*.

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## Presentations

### Conference talks

2021 *Syntax for two-level type theory*, HoTT/UF 2021, 17th July 2021.

2021 *Syntax for two-level type theory*, TYPES 2021, 15th June 2021.

2020 *A proof-theoretical semantics for homotopy type theory*, HoTT/UF 2020, 6th July 2020.

### Seminars

2021 *Two-level type theory*, Logic Seminar Verona, Università degli studi di Verona, 4th June 2021.

2019 *A simpler semantics for a large fragment of Homotopy Type Theory*, Università degli studi di Verona, 29th October 2019.

2018 *Sketches of Homotopy type theory*, Università degli studi di Milano-Bicocca, 6th December 2018.

2017 *Point-free categorical semantics for Martin-Löf type theory*, School of Information Science, JAIST, 18th May 2017.

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## Teaching

### Courses

2021 Half of the course "Advanced course in foundations of mathematics", 24h, *Università degli Studi di Verona*, Verona, Department of Computer Science.

Borrowed by the doctoral programme in Mathematics, *Università degli Studi di Trento*, as part of the PhD course "From Hilbert's Programme to Dynamical Algebra".

2021 Mini-course on "Introduction to Homotopy Type Theory", 3h, *Universität Tübingen*, Tübingen, Carl Friedrich von Weizsäcker-Kolloquium.

2020 Half of the course "Advanced course in foundations of mathematics", 24h, *Università degli Studi di Verona*, Verona, Department of Computer Science.

### Tutorings

2016 Algebra II, 12h, Chair: Dr. V. Monti, *Università degli Studi dell'Insubria*, Como, Department of Science and High Technology.

2015 Algebra I, 12h, Chair: Dr. V. Monti, *Università degli Studi dell'Insubria*, Como, Department of Science and High Technology.

2015 Analisi I, 10h, Chair: Prof. A. G. Setti, *Università degli Studi dell'Insubria*, Como, Department of Science and High Technology.

## International experience

2017 Secondment at University of Canterbury, Christchurch, New Zealand. Hosted by Prof. D. Bridges, under the EU CORCON project (15th October 2017 – 15th December 2017).

2017 Secondment at JAIST, Nomi, Ishikawa, Japan. Hosted by Prof. H. Ishihara, under the EU CORCON project (20th April 2017 – 20th June 2017).

## Other experiences

2021 Co-organisation of the workshops “Type Theory in Type Theory” and “Computation in Face of Incompleteness” in the conference “Celebrating 90 years of Gödel's incompleteness theorems”, *Universität Tübingen*.

2016–2019 PhD Student's representative in the PhD Program in Computer Science and Computational Mathematics, *Università degli Studi dell'Insubria*, Como, Department of Theoretical and Applied Sciences.

2015–2016 Student's representative in CCS (Consiglio di Corso di Studio) in Mathematics, *Università degli Studi dell'Insubria*, Como, Department of Science and High Technology.

2013–2016 Member of AiQua (Gruppo di gestione Assicurazione della Qualità), *Università degli Studi dell'Insubria*, Como, Department of Science and High Technology.

## Conferences, schools and courses attended

2021 Workshop on Homotopy Type Theory / Univalent Foundations, The Internet.  
Conference “Celebrating 90 years of Gödel's incompleteness theorems”, *Universität Tübingen*.

International Conference on Types for Proofs and Programs.

Spring school on Homotopy type theory, EPIT.

2020 Workshop “Mathematical Logic: Proof Theory, Constructive Mathematics”, *Oberwolfach*.

Workshop “Divario di genere in Matematica” on the gender gap in Mathematics, *Università di Milano*, Department of Mathematics.

Workshop on Homotopy Type Theory / Univalent Foundations, The Internet.

Courses on Psychology, Education, Anthropology and Pedagogy (24CFU) which are needed in Italy to teach in high schools, *Università telematica e-Campus*.

2019 Autumn school “Proof and computation”, *Haus der bayerischen Landwirtschaft*, Herrsching.

Course “Foundations of modal logic”, Prof. Achille Frigeri, *Università degli Studi dell'Insubria*, Department of Science and High Technology.

2018 Autumn school “Proof and computation”, *Aurachhof*, Fischbachau.

Summer school and conference “Toposes in Como”, *Università degli Studi dell’Insubria*, Como.

Summer school “Types, Sets and Constructions”, *Hausdorff Research Institute for Mathematics (HIM)*, Bonn.

Course “An introduction to Networks”, Dr. Francesca Arrigo, *Università degli Studi dell’Insubria*, Como, Department of Science and High Technology.

2017 Course “Topos Theory”, Dr. Iosif Petrakis, *Università degli Studi di Verona*, Department of Computer Science.

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## Languages

Italian Mother tongue

English Advanced (C1)

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## Computer skills

Basic JAVA, SAS (*Attendance at the formation course "Programmazione SAS 1: fondamentali", 2014*)

Intermediate Matlab, L<sup>A</sup>T<sub>E</sub>X, Microsoft Office

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## Scholarships

2016–2019 PhD fellowship, *Università degli Studi dell’Insubria*.

2016 Renewal of the scholarship for first-year Master’s students, *Università degli Studi dell’Insubria*.

2015 Scholarship for first-year Master’s students, *Università degli Studi dell’Insubria*.