# Curriculum Vitae

Igor Baković

## 1 Education

Graduate studies

- Faculty of Sciences and Mathematics, Split 1993-1996,

- Faculty of Sciences and Mathematics, Zagreb 1997-1999

Diploma thesis: Rational points on elliptic curves (Andrej Dujella, adviser, Faculty of Sciences and Mathematics, Zagreb, 1999)
Postgraduate studies in physics

- Ludwig-Maximilians University, Munich 2000-2003,

Doctorate studies in mathematics

- Rudjer Boskovic Institute, Zagreb, 2004-2007

Ph.D. thesis: Bigroupoid 2-torsors (prof. Branislav Jurčo, adviser, Ludwig-Maximilians University, Munich 2008)

## 2 Employment

1. research fellow, Rudjer Bošković Institute, Zagreb, 1999-2009.

2. assistant professor, University of Split, 2009-2011.

3. research visitor, Institut des Hautes Études Scientifiques, 2012.

4. Marie Curie postdoctoral fellow, University of Warsaw, 2013

5. Advisor to the Mayor for science and culture, City of Split, 2014-2020.

6. postdoc, School of Applied Mathematics and Informatics, Josip Juraj Strossmayer University in Osijek 2021 - 2023.

7. postdoc, School of Mathematical Sciences, Queen Mary University of London, May-June 2023.

# 3 Conferences

1. Noncommutativity - Geometry and Probability, July 10-14, 2000, University of Nottingham, United Kingdom

2. XIII International Congress on Mathematical Physics, July 17-22, 2000, Imperial College, London, United Kingdom

3. Mathematical Challenges of the 21st Century, August 07-12, 2000, UCLA, Los Angeles, USA

4. Noncommutative Yang-Mills theories, Bayrischzell Workshop 2001, March 30 - April 02, 2001, Bayrischzell, Germany

5. Noncommutative Geometry and Quantum Groups, September 17-29, 2001, Banach Institute, Warsaw, Poland

6. Bayrischzell Workshop 2002, April 26-29, 2002, Bayrischzell, Germany

7. Noncommutativity - From mathematics to phenomenology, May 02-05, 2003, Bayrischzell, Germany

8. Groupoids and stacks in physics and geometry, June 28 - July 02, 2004, Centre International des Recontres Mathématiques, Marseilles, France

9. Mathematische Arbeitstagung 2005, June 10-16, Max Planck Institute for Mathematics, Bonn, Germany

10. Gerbes, Groupoids and Quantum field theory, May 9-13, 2006, Erwin Schroedinger Institute, Vienna, Austria

11. Workshop on Higher categories and their applications, January 9-13, 2007, Fields Institute, Toronto, Canada

12. Arbeitsgemeinschaft: Conformal Field Theory, 1 - 7 April 7, 2007, Mathematisches Forschungsinstitut Oberwolfach, Germany

13. IV Seminar on Categories and Applications, 6 - 9 June, 2007, Centre de Recerca Matemàtica, Barcelona, Spain

14. Advanced Course on Simplicial Methods in Higher Categories, February 4 to 14, 2008, Centre de Recerca Matemàtica, Barcelona, Spain

15. Homotopy Structures in Geometry and Algebra; Derived Categories, Higher Categories, June 30 to July 5, 2008, Centre de Recerca Matemàtica, Barcelona, Spain

16. Categories in Algebra, Geometry and Logic, 10 - 11 October 2008, Royal Flemish Academy of Belgium, Brussels, Belgium

17. The 4th workshop on Categories, Logic and Foundations of Physics, 07 January 2009, Imperial College London, United Kingdom

18. 88th Peripatetic Seminar on Sheaves and Logic, celebrating the 60th birthdays of Martin Hyland and Peter Johnstone, 4-5 April, 2009, University of Cambridge, United Kingdom

19. Workshop on Geometry, Quantum Fields, and Strings 6 - 12 June, 2010, Mathematisches Forschungsinstitut Oberwolfach, Germany

20. International Conference in Category Theory Dedicated to the 100th Anniversary of Saunders Mac Lane, 29 June - 4 July, 2009, University of Cape Town, South Africa

21. Workshop on Higher Category Theory, July 13, 2010, University of Utrecht, Netherlands

22. Workshop and School on Higher Gauge Theory, TQFT and Quantum Gravity, 10-13 February, 2011 (Workshop), 7-13 February, 2011, Instituto Superior Técnico, Lisbon, Portugal

23. 92nd Peripatetic Seminar on Sheaves and Logic, 23-24 April, 2011, University of Oxford, United Kingdom

24. 93rd Peripatetic Seminar on Sheaves and Logic, 14-15 April, 2012, University of Cambridge, United Kingdom

25. Workshop on Opetopes, Opetopic Sets, and Opetopic Categories, March 8-9 and March 15-16, 2013, University of Warsaw, Poland

25. Conference in memory of Aurelio Carboni, Università degli Studi, June 24 - 26, 2013, Milan, Italy

26. The Second Pacific Rim Mathematical Association Congress, Shanghai Jiao Tong University, June 24-28, 2013, Shanghai, China

27. AMSI Workshop on Applications of Category Theory, July 02-05, 2013, Macquarie University, Sydney, Australia

28. International Conference in Category Theory, July 07-13, 2013, Macquarie University, Sydney, Australia

29. Samuel Eilenberg Centenary Conference, July 22-26, 2013, University of Warsaw, Poland

30. Workshop on Homotopy Type Theory, February 10 - 14, 2017, Max Planck Institute for Mathematics, Bonn, Germany

31. Categories in Homotopy Theory and Rewriting, September 25 – 29, 2017, Centre International de Rencontres Mathématiques, Luminy, France

32. 2nd ItaCa workshop, December 20-21, 2021, Scuola Politecnica, Università di Genova, Italy

33. Linear Logic Winter School, 24 – 28 January, 2022, within thematic month *Logic and Interactions*, Centre International de Rencontres Mathématiques, Luminy, France

34. Logic of Probabilistic programming, 31 January – 4 February 2022, within thematic month *Logic and Interactions*, Centre International de Rencontres Mathématiques, Luminy, France

35. Logic and transdisciplinarity, 7 – 11 February 2022, within thematic month *Logic and Interactions*, Centre International de Rencontres Mathématiques, Luminy, France

36. Logic, databases and complexity: new methods and challenges, 14 – 18 February 2022, within thematic month *Logic and Interactions*, Centre International de Rencontres Mathématiques, Luminy, France

37. Logic and higher structures, 21 – 25 February 2022, within thematic month *Logic and Interactions*, Centre International de Rencontres Mathématiques, Luminy, France

38. International Conference in Category Theory, July 2 - 8, 2023, UC Louvain-la-Neuve, Belgium

39. The 4th ItaCa Workshop, December 18-19, 2023, Turin, Italy.

40. Higher Algebra, Geometry, and Topology, 6 – 10 May, 2024, Centre International de Rencontres Mathématiques, Luminy, France

41. The International Category Theory Conference CT2024, 23 - 29 June, 2024, University of Santiago de Compostela, Spain

42. Toposes in Mondovì, September 9-11, 2024, Istituto Grothendieck, Mondovì, Italy

43. HOPF25: Conference on Hopf algebras, quantum groups, monoidal categories and related structures, 22-26 April, 2025, Université libre de Bruxelles (ULB), Brussels, Belgium

44. 110th Peripatetic Seminar on Sheaves and Logic, 03-04 May 2025, Tallin, Estonia

19. The 6th ItaCa Workshop, 22-23 December 2025, Milano, Italy

# 4 Conference talks

1. Bigroupoid 2-torsors, Gerbes, Groupoids and Quantum field theory, May 9-13, 2006, Erwin Schroedinger Institute, Vienna, Austria

2. Bigroupoid principal 2-bundles, Workshop on Higher categories and their applications, January 9-13, 2007, Fields Institute, Toronto

3. 2-torsors and gerbes, IV Seminar on Categories and Applications, 6 - 9 June, 2007, Centre de Recerca Matemàtica, Barcelona, Spain

4. The classifying topos of a topological bicategory, International Conference in Category Theory, 29 June - 4 July, 2009, Stellenbosch University, South Africa

5. Fibrations of bicategories, International Conference in Category Theory, 29 June - 4 July, 2009, University of Cape Town, South Africa

6. Stacks and étale 2-spaces, Geometry, Quantum Fields, and Strings: Categorial Aspects, 6 - 12 June, 2007, Mathematisches Forschungsinstitut Oberwolfach, Germany

7. Diaconescu's theorem for 2-topoi, Workshop on Higher Category Theory, July 13, 2010, University of Utrecht, Netherlands

8. Stacks, gerbes and étale groupoids, Workshop on Higher Gauge Theory, TQFT and Quantum Gravity, 10-13 February, 2011, Instituto Superior Técnico, Lisbon, Portugal

9. Bicategorical Galois Theory, 92nd Peripatetic Seminar on Sheaves and Logic, 23-24 April, 2011, University of Oxford, United Kingdom

10. Fibrations in tricategories, 93nd Peripatetic Seminar on Sheaves and Logic, 14-15 April 2012, University of Cambridge, United Kingdom

11. 2-dimensonal fibrations, Workshop on Opetopes, Opetopic Sets, and Opetopic Categories, March 8-9, 2013, University of Warsaw, Poland

12. Coherence for fibrations of bicategories, Workshop on Opetopes, Opetopic Sets, and Opetopic Categories, March 15-16, 2013, University of Warsaw, Poland

13. Categorification in topology, geometry and combinatorics, The Second Pacific Rim Mathematical Association (PRIMA) Congress, Shanghai Jiao Tong University, June 24-28, 2013, Shanghai, China

14. Grothendieck construction for bicategories, International Conference in Category Theory, July 07-13, 2013, Macquarie University, Sydney

15. Formal enhanced category theory, 2nd ItaCa workshop, December 20-21, 2021, Scuola Politecnica, Università di Genova, Italy

16. (Co)Fibrations, (pseudo)distributive laws and (quasi)toposes, Toposes in Mondovì conference, September 9-11, 2024, Italy

17. Comma categories in foundations, 110th Peripatetic Seminar on Sheaves and Logic, 03-04 May 2025, Tallin, Estonia

18. Comma categories and 2-(co)monads in foundations and theoretical computer science, Transactions in Category Theory, 2nd of June 2025, University of Strathclyde, Glasgow, Scotland

19. Comma 2-comonad and its cousins, The 6th ItaCa Workshop, 22-23 December 2025, Milano, Italy

## 5   Recent seminar talks

1. Enhanced 2-adjunctions, New York City Category Theory Seminar, February 02, 2023, City University of New York, U.S.A.

2. Enhanced bicategories, The School of Mathematical Sciences Research Seminar, May 16, 2023, Queen Mary University of London. U.K.

# 6  Papers in scientific journals

1. P. Aschieri, I. Baković, B. Jurčo, P. Schupp, Noncommutative gerbes and deformation quantization, Journal of Geometry and Physics 60 (11), (2010) 1754-1761.

2. I. Baković, B. Jurčo, The classifying topos of a topological bicategory, Homology, Homotopy and Applications 12(1), (2010) 279-300.

# 7  Preprints and papers in preparation

1. Igor Baković, The simplicial interpretation of bigroupoid 2-torsors, arXiv:0902.3436

2. Igor Baković, Comma 2-comonad I: Eilenberg-Moore 2-category of colax coalgebras, arXiv:2505.00682 (submitted to Theory and Applications of Categories)

3. Igor Baković, Comma 2-comonad II: lifings of comonads, (to be submitted to Theory and Applications of Categories)

4. Igor Baković, Comma 2-comonad III: monads in Eilenberg-Moore 2-category of colax coalgebras, (to be submitted to Theory and Applications of Categories)

5. Igor Baković, Fibrations of bicategories, preprint

6. Igor Baković, Yoneda lemma for bicategories, preprint

7. Igor Baković, Grothendieck-Bénabou construction for generalized fibrations, in preparation

8. Igor Baković, Comprehension categories and fibrations, in preparation

8. Igor Baković, On admissibility of associated fibrations, in preparation

9. Igor Baković, Associated Beck-Chevalley bifibrations, in preparation

10. Igor Baković, Enriched context of Yoneda structures, in preparation

11. Igor Baković, Gray tensor product and duality for equipments, in preparation

12. Igor Baković, Multi-T-bicategories, in preparation

# 8   Scientific interests

- (higher) category theory

- homotopy (type) theory

- theoretical computer science

- logic

- philosophy of mathematics