

PAOLO SARACCO



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PERSONAL DATA

Birthday and Birthplace: 24 March 1989 - Ceva (CN) - Italy.

Languages known: Italian (mother tongue), English (CEFR B2), Spanish (CEFR B2), Romanian (CEFR A2).

Current position: Postdoctoral Researcher at the ULB (since May 2018).

EDUCATION

2014 - 2017 *PhD in Pure and Applied Mathematics*, with honors, University of Turin.

Thesis: *Hopf Structures and Duality*.

Supervisor(s): prof. Alessandro Ardizzoni.

Co-supervisor(s): prof. Laiachi El Kaoutit Zerri (Univ. Granada, Spain).

2012 - 2014 *Master degree in Mathematics*, 110/110 summa cum laude, University of Turin.

Thesis: *On the Fundamental Structure Theorem for quasi-Hopf bimodules*.

Supervisor(s): dott. Alessandro Ardizzoni.

Co-supervisor(s): prof. Laiachi El Kaoutit Zerri (Univ. Granada, Spain).

2008 - 2011 *Bachelor degree in Mathematics*, 110/110 summa cum laude, University of Turin.

Thesis: *L'algebra lineare nello studio delle varietà di punti*.

Supervisor(s): dott. Mario Valenzano.

2003 - 2008 *Diploma di Maturità Classica*, 100/100, Liceo Classico Europeo "Umberto I" of Turin.

RESEARCH

Main research topics

Rings and algebras. Hopf algebras. Category theory. Quantum algebra. Homological algebra.

Publications

Preprint

2019 P. Saracco, *Antipodes, preantipodes and Frobenius functors*. [arXiv:1906.03435](https://arxiv.org/abs/1906.03435)

2019 A. Ardizzoni, L. El Kaoutit, P. Saracco, *Differentiation and integration between Hopf algebroids and Lie algebroids*. [arXiv:1905.10288](https://arxiv.org/abs/1905.10288)

2019 P. Saracco, *Hopf modules, Frobenius functors and (one-sided) Hopf algebras*. [arXiv:1904.13065](https://arxiv.org/abs/1904.13065)

2017 A. Ardizzoni, P. Saracco, D. Ştefan, *PBW-deformations of graded rings*. [arXiv:1710.04444](https://arxiv.org/abs/1710.04444)

2016 P. Saracco, *Coquasi-bialgebras with Preantipode and Rigid Monoidal Categories*. [arXiv:1611.06819](https://arxiv.org/abs/1611.06819)

Published

- 2019** L. El Kaoutit, P. Saracco, *Comparing topologies on linearly recursive sequences*. *Ars Math. Contemp.* **16** (2019), n. 2, 319-329. [arXiv:1705.03433](#)
- 2018** L. El Kaoutit, P. Saracco, *Topological tensor product of bimodules, complete Hopf algebroids and convolution algebras*. *Commun. Contemp. Math.*, online ready, [doi.org/10.1142/S0219199718500153](#). [arXiv:1705.06698](#)
- 2017** P. Saracco, *On the structure theorem for quasi-Hopf bimodules*. *Appl. Categ. Structures* **25** (2017), no. 1, 3–28. [arXiv:1501.06061](#)
- 2016** A. Ardizzoni, L. El Kaoutit, P. Saracco, *Functorial constructions for non-associative algebras with applications to quasi-bialgebras*. *J. Algebra* **449** (2016), 460–496. [arXiv:1507.02402](#)

Referee and Review tasks

- Referee for: *Journal of Algebra and Its Applications*, *Rendiconti del Seminario Matematico*.
- Reviewer for the *zbMATH* since May 2017 ([8 reviews](#)).

Communications at conferences

- May 2019** “*A pair of Frobenius pairs for Hopf modules*”, Communication at the conference “Rings, Modules, and Hopf Algebras”, Universidad de Almeria, Almeria (Spain).
- Dec 2018** “*Dalle Algebre di Frobenius ai Funtori di Frobenius, alla Teoria delle Algebre di Hopf*”, Communication at the conference “Welcome Home 2018”, Università di Torino, Torino (Italy).
- Oct 2018** “*Tannaka-Kreĭn reconstruction and coquasi-bialgebras with preantipode*”, Communication at the conference “SIC - Séminaire Itinérant de Catégories”, Université de Lille, Lille (France).
- Jul 2018** “*An Hopf Algebroid Approach to Jets Spaces and Lie Algebroid Integration*”, Communication at the conference “GTM Seminar: some topics in Commutative Algebra and Algebraic Geometry”, Politecnico di Milano, Milan (Italy).
- Aug 2017** “*On Lie-Rinehart algebras and complete duals of co-commutative Hopf algebroids*”, Communication at the conference “Brussels Hopf Algebra Workshop 2017”, Université libre de Bruxelles, Bruxelles (Belgium).
- Sep 2015** “*The Structure Theorem for quasi-Hopf bimodules: from quasi-antipodes to preantipodes*”, Communication at the “III Congreso de Jovenes Investigadores de la RSME”, Universidad de Murcia (Spain).
- Jun 2015** “*On the Structure Theorem for Quasi-Hopf Bimodules*”, Communication at the conference “New trends in Hopf algebras and tensor categories”, Royal Flemish Academy of Belgium for Science and the Arts, Bruxelles (Belgium).

Seminars, posters and other contributions

- Jul 2019** “*On Frobenius and Hopf*”, poster presented at the CIMPA school “Research School on Quantum Simmetries”, Universidad de los Andes, Bogotá (Colombia).
- May 2019** “*One-sided Hopf algebras and Frobenius pairs of functors for Hopf modules*”, 1 hour seminar within the cycle *ALGB Seminars* organized by the Algebra Research Group ALGB of the VUB, VUB, Bruxelles (Belgium).
- Mar 2019** “*One-sided Hopf algebras and Frobenius pairs of functors for Hopf modules*”, 1 hour seminar within the cycle *Seminar on Quantum groups, Hopf algebras and monoidal categories* organized by VUB, ULB and UCL, UCL, Louvain-la-Neuve (Belgium).
- Jan 2019** “*Antipodes vs Preantipodes*”, poster presented at the conference “Aspects of Higher Representation Theory: Quantum Groups and Categorification”, VUB, Bruxelles (Belgium).
- Dec 2018** “*Antipodes vs Preantipodes*”, poster presented at the conference “Quantum 60, Colloquium on Algebra and Representations”, Huerta Grande, Cordoba (Argentina).
- Nov 2018** “*Hopf Algebroids and the integration problem for Lie Algebroids*”, 1 hour seminar, Campus of Ceuta of the University of Granada, Ceuta (Spain)
- Mar 2018** “*A survey on Hopf algebra theory between algebra and geometry*”, 1 hour seminar within the cycle *Seminari di Algebra e Geometria Algebrica*, Department of Mathematics “G. Peano”, University of Turin (Italy).
- Mar 2018** “*Una (brevissima) introduzione alle algebre di Hopf*”, 1 hour seminar within the cycle *Mathematics Ph.D. Seminars*, Department of Mathematics “G. Peano”, University of Turin (Italy).

Dec 2016 “*A Reconstruction Theorem for Coquasi-bialgebras with Preantipode*”, 1 hour seminar within the cycle *Seminar on Quantum groups, Hopf algebras and monoidal categories* organized by VUB, ULB and UCL, Université libre de Bruxelles, Bruxelles (Belgium).

Apr 2016 “*Finite dual constructions*”, 2 hours seminar, University of Bucharest (Romania).

Nov 2015 “*A duality result for (dual) quasi-bialgebras*”, 1 hour seminar, IEMath, Granada (Spain).

Dec 2014 “*Il preantipode ed il Teorema Fondamentale di Struttura per i quasi-bimoduli di Hopf*”, 1 hour seminar within the cycle *Mathematics Ph.D. Seminars*, Department of Mathematics “G. Peano”, University of Turin (Italy).

Aug 2014 “*Il preantipode ed il Teorema Fondamentale di Struttura per i quasi-bimoduli di Hopf*”, 1/2 hour seminar, Department of Mathematics and Computer Science, University of Ferrara (Italy).

Scientific collaborations

- Prof. Alessandro Ardizzoni, Università di Torino (Italia).
- Prof. Laiachi El Kaoutit, Universidad de Granada (Spagna).
- Prof. Dragoş Ştefan, Universitatea din Bucureşti (Romania).
- Prof. Joost Vercruyse, Université Libre de Bruxelles (Belgio).

Periods as visiting researcher

- University of Granada (Spain) with prof. L. El Kaoutit. November 5, 2018 - November 14, 2018.
- University of Granada (Spain) with prof. L. El Kaoutit. November 17, 2017 - November 30, 2017.
- University of Bucharest (Romania) with prof. D. Ştefan, February 15, 2016 - May 17, 2016.
- University of Granada (Spain) with prof. L. El Kaoutit. November 2, 2015 - December 2, 2015.

Collaboration in organizing congresses and workshops

- Workshop: *Mini-Workshop: A Categorical Day in Turin* together with A. Ardizzoni, C. Bertolin and F. Cardone. University of Turin (Italy), May 11, 2017.
- Congress: *Brauer groups, Hopf algebras and monoidal categories. A conference in honour of Stef Caenepeel on the occasion of his 60th birthday* together with A. Agore, A. Ardizzoni, S. Dăscălescu, I. Goyvaerts, G. Militaru and J. Vercruyse. University of Turin (Italy), May 24-27, 2016.
- Workshop: *Workshop on Hopf Algebras and Related Topics* together with A. Ardizzoni and I. Goyvaerts. University of Turin (Italy), January 21-22, 2016.
- Congress: *Ferrara Algebra Workshop, a Congress in Honor of Prof. Claudia Menini* together with A. Ardizzoni, E. Ermili, F. Ermili, R. Ermili and F. Stumbo. University of Ferrara (Italy), September 17-18, 2015.

Participation to Research Projects

- Participant to the research project “Generalized Hopf Algebras and Quantum Groups” at the ULB, coordinated by J. Vercruyse (2018 - today).
- Participant to the local research project *Ricerca Finanziata dall’Università (ex 60%)*, Type A, “Algebra e dintorni” of the University of Turin, coordinated by A. Ardizzoni (2017 - today).
- Participant to the local research project *Ricerca Finanziata dall’Università (ex 60%)*, Type A, “Algebra e Argomenti Correlati” of the University of Turin, coordinated by M. Roggero (2016 - 2017).
- Participant to the *Proyectos de I+D+I* (Programa Estatal de Fomento de la Investigación Científica y Técnica de Excelencia, Spain) of the Ministerio de Economía y Competitividad, research project “Avances y Nuevas Perspectivas en Estructuras de Algebroides de Hopf, Grupoides y Algebroides de Lie”, grant MTM2016-77033-P, coordinated by L. El Kaoutit (2016 - today).
- Participant to the local research project *Ricerca Finanziata dall’Università (ex 60%)*, Type A, “Algebra e sue applicazioni” of the University of Turin, coordinated by M. Roggero (2015 - 2016).

- Participant to the local research project *Ricerca Finanziata dall'Università (ex 60%)*, Type B - Young Researchers, “Algebra, Geometria Algebrica e Storia” of the University of Turin, coordinated by C. Bertone (2015 - 2016).
- Participant to the local research project *Ricerca Finanziata dall'Università (ex 60%)*, Type A, “Algebra e Geometria Algebrica e loro applicazioni” of the University of Turin, coordinated by M. Roggero (2014 - 2015).
- Participant to the local research project *Ricerca Finanziata dall'Università (ex 60%)*, Type B - Young Researchers, “Algebra e Geometria Algebrica” of the University of Turin, coordinated by A. Ardizzoni (2014 - 2015).

Membership of organizations or research institutes

GNSAGA (INdAM) Member of the *Gruppo Nazionale per le Strutture Algebriche, Geometriche e loro Applicazioni*, section *Strutture algebriche e geometria combinatoria* (2014 - today).

UMI Associate of the *Unione Matematica Italiana* (2014 - today).

Scholarships, grants, fundings, awards

Inherent the research activity

Nov 2018 *Quality award - year 2017*, assigned by the Politecnico di Torino to recognize and encourage excellence in research (shared with other deserving PhD students).

May 2018 *Postdoctoral fellowship* at the ULB of Bruxelles.

Nov 2017 *Quality award - year 2016*, assigned by the Politecnico di Torino to recognize and encourage excellence in research (shared with other deserving PhD students).

Nov 2015 *IEMath-GR support for visits of young talented researchers*, €1000.00, to spend a research period at the University of Granada with prof. L. El Kaoutit.

Feb 2015 *Funding from the GNSAGA*, €624.00, to participate to the “*Congreso de la Real Sociedad Matematica Española 2015*”.

Nov 2014 - Oct 2017 *Ph.D. scholarship* at the University of Turin.

For merit in study

Jul 2016 Appointed *cultore della materia* for the Scientific Disciplinary Sector MAT/02 Algebra from the Department of Mathematics “G. Peano”, University of Turin.

Feb - May 2016 *Erasmus Scholarship*, €690,00, to spend a research period at the University of Bucharest.

May 2016 *Medaglia d'argento* and *Premio Picco Botta* from the University of Turin for the best master thesis in Mathematics (shared with Luca Alasio).

Oct 2012 *Menzione Optime* (acknowledgement of merit in study) from Unione Industriale di Torino.

TEACHING EXPERIENCE

Theses supervised

2017 Co-supervisor of Irene Soccolini’s master thesis “Poincaré-Birkhoff-Witt Theorem and its extensions”.

Teaching

Spring 2019 Vrije Universiteit Brussel, *Hopf Algebras and Quantum Groups* (with Joost Vercauteren).

Tutoring

- Fall 2017** University of Turin, *Collaborazione didattica per cicli di esercitazioni* (art. 76): *Tutorato di Matematica I*, Degree in Chemistry and Chemical Technologies, University of Turin.
- Fall 2016** University of Turin, *Collaborazione didattica per cicli di esercitazioni* (art. 76): *Tutorato di Matematica I*, Degree in Chemistry and Chemical Technologies, University of Turin.
- Fall 2014** University of Turin and CRT Foundation, *Collaborazione didattica per cicli di esercitazioni* (art. 76): *DMT project*.
- 2013** University of Turin and Ministry of Education, University and Research, *PP&S project*.
- Spring 2013** University and Municipality of Turin, *Borsa studenti part-time* (art.13): *Scuola dei Compiti project*.
- Spring 2011** University of Turin, *Borsa studenti part-time* (art.13): *Calcolo delle Probabilità e Statistica*.

INSTITUTIONAL OFFICES

2015 - 2017 Member of the Research Commission at the Dept. of Mathematics “G. Peano” of the University of Turin.

PERSONAL SKILLS AND COMPETENCES

Language certificates

English

- May 2015** University Language Centre (CLA-UniTO) test.
Common European Framework for Languages (CEFR): level B2.
- Mar 2007** English for Speakers of Other Languages (FCE), University of Cambridge (United Kingdom).
Common European Framework for Languages (CEFR): level B2.

Spanish

- Feb 2007** Diploma de Español como Lengua Extranjera (DELE, Nivel intermedio), Instituto Cervantes
Common European Framework for Languages (CEFR): level B2.

Romanian

- May 2016** Language Certificate from the Department of Romanian Language and Literature, University of Bucharest
Common European Framework for Languages (CEFR): level A2.

I hereby authorize the processing of the personal data contained in this CV in compliance with the Italian Personal Data Protection Code (D. Lgs. no. 196, 30 June 2003).

Bruxelles, July 8, 2019,

