

# ILARIA COLAZZO

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| CONTACT INFORMATION | University of Exeter<br>Department of Mathematics<br>Exeter, UK   | I.Colazzo@exeter.ac.uk<br>ilariacolazzo@gmail.com<br>www.ilariacolazzo.info |
| CURRENT POSITION    | <b>University of Exeter</b> , Exeter, UK<br><i>Postdoctoral Research fellow</i>   |   |
| RESEARCH INTERESTS  | Algebra, Set-theoretical solutions of the Yang-Baxter equation, Skew braces, trusses and generalisations, Regular subgroups of the holomorph, Hopf-Galois extensions, Set-theoretical solutions of the pentagon equation  |   |
| RESEARCH EXPERIENCE | <b>University of Exeter</b> , Exeter, UK,<br><i>Postdoctoral Research fellow in Mathematics</i><br>EPSRC project: Hopf-Galois Theory and Skew Braces.<br>PI: Prof. Nigel Byott  | <b>01/06/2021 – Present</b>   |
|                     | <b>Vrije Universiteit Brussel</b> , Brussels, Belgium,<br><i>Postdoctoral Researcher in Mathematics</i><br>Scientific advisor: Prof. Eric Jespers   | <b>01/10/2019 – 28/02/2021</b>  |
|                     | <b>University of Salento</b> , Lecce, Italy<br><i>Postdoctoral Researcher in Mathematics</i><br>Research project: "Yang-Baxter equation and related algebraic structures".<br>Scientific advisor: Prof. Francesco Catino  | <b>01/12/2017 – 30/11/2018</b>  |
|                     | <b>University of Salento and University of Basilicata</b> , Lecce, Italy<br><i>PhD Student</i><br>Scientific advisor: Prof. Francesco Catino  | <b>03/03/2014 – 20/07/2017</b>  |
| EDUCATION           | <b>University of Salento and University of Basilicata</b> , Lecce, Italy<br><i>Department of Mathematics and Physics "Ennio De Giorgi"</i><br>Ph.D., Mathematics and Informatics<br>Dissertation Title: "Left Semi-Braces and the Yang-Baxter equation".<br>Advisor: Prof. F. Catino<br>Final mark: cum Laude | <b>20/07/2017</b>   |
|                     | <b>University of Salento</b> , Lecce, Italy<br><i>Department of Mathematics and Physics</i><br>M.S., Mathematics<br>B.S., Mathematics   | <b>25/10/2012</b><br><b>18/12/2008</b>                                      |
|                     | <b>University of Salento</b> , Lecce, Italy<br><i>Scuola Normale Superiore ISUFI</i><br><i>Nanoscience and Grid-Computing</i><br>Licence (it: Licenza Scuola Superiore ISUFI Pre-Laurea I livello)  | <b>15/06/2009</b>   |

## PUBLICATIONS

- [1] **I. Colazzo**, E. Jespers, A. Van Antwerpen, C. Verwimp, *Left non-degenerate set-theoretic solutions of the Yang-Baxter equation and semitrusses*, J. Algebra (2022).
- [2] **I. Colazzo**, E. Jespers, L. Kubat. *Set-Theoretic Solutions of the Pentagon Equation*, Commun. Math. Phys. (2020).
- [3] **I. Colazzo**, A. Van Antwerpen, *The algebraic structure of left semi-trusses*, J. Pure Appl. Algebra, 225 (2021) n.2, 106467.
- [4] F. Catino, **I. Colazzo**, P. Stefanelli, *The Matched Product of the Solutions to the Yang–Baxter Equation of Finite Order*, Mediterr. J. Math., 17 (2020), no. 2, Art. 58.
- [5] F. Catino, **I. Colazzo**, P. Stefanelli, *The Matched Product of the Solutions to the Yang–Baxter Equation of Finite Order*, Mediterr. J. Math., 17 (2020), no. 2, Art. 58, .
- [6] F. Catino, **I. Colazzo**, P. Stefanelli, *The matched product of solutions to the Yang-Baxter equation*, J. Pure Appl. Algebra 224 (2020) n. 3, 1173–1194.
- [7] F. Catino, **I. Colazzo**, P. Stefanelli, *Skew left braces with non-trivial annihilator*, J. Algebra Appl. 18 (2019) n.2, 1950033, 23 pp.
- [8] F. Catino, **I. Colazzo**, P. Stefanelli, *Semi-braces and the Yang–Baxter equation*, J. Algebra, **483**, (2017), 163–187.
- [9] F. Catino, **I. Colazzo**, P. Stefanelli, *Regular subgroups of the affine group and asymmetric product of radical braces*, J. Algebra, **455**, (2016), 164–182.
- [10] F. Catino, **I. Colazzo**, P. Stefanelli, *On regular subgroups of the affine group*, Bull. Aust. Math. Soc., **91** (2015), 76–85.

## PREPRINTS AND OTHERS

- [1] **Colazzo, I.**, Jespers, E., Kubat, L., Van Antwerpen, A., Verwimp, C., *Finite idempotent set-theoretic solutions of the Yang–Baxter equation*, arXiv:2212.07361.
- [2] **I. Colazzo**, M. Ferrara, M. Trombetti, *On derived-indecomposable of the Yang-Baxter equation*, arXiv:2210.08598.
- [3] **I. Colazzo**, *Braces: between regular subgroups and solutions of the Yang-Baxter equation*, Algebra for Cryptography, Collectio CiphRARum, (Extended abstract), ISBN 9791259943286 (2021).

## INVITED TALKS

## INVITED TALKS AT CONFERENCES AND WORKSHOPS

*TBA*: Advances in Group Theory and Applications 2023 ( Lecce, Italy) 05 – 09 June 2023

*YB-semitrusses and left non-degenerate solutions to the Yang-Baxter equation*: Conference Hopf algebras and Galois module theory (Omaha, US/Online) 30 May – 03 June 2022.

*YB-semitrusses with associated bijective solutions*: Braces in Bracelet Bay, Swansea University (Online), 04–06 June 2022

*Skew braces and solutions of the Yang-Baxter equation*: Conference Hopf algebras and Galois module theory (Online), 24–27 May 2021

*Braces: between regular subgroups and solutions of the Yang-Baxter equation*: Workshop *Algebra for Cryptography* (L’Aquila), 10-11 October 2019.

*The matched product of the solutions of the Yang-Baxter equation: Meeting Noncommutative and non-associative structures, braces and applications* (Malta), 11-15 March 2018.

## SEMINAR TALKS

*Combinatorial solutions to the Yang-Baxter equation and applications*, Séminaire de topologie algébrique, Louvain-La-Neuve (Belgium) 17 January 2023

*Set-theoretic solutions to the Yang-Baxter equation and skew braces*, Algebra Seminar, University of Leeds (UK), 06 December 2022.

*Retractability problem for quasi-linear cycle sets*, Seminar Algebra, University of Warsaw (Poland), 20 October 2022.

*Set-theoretic solution of the Pentagon Equation: the involutive case*, QA Seminar, Vrije Universiteit Brussel (Belgium), 18 May 2022.

*Set-theoretic solutions of the Yang-Baxter equation and related associative structure*, University of Padua (Italy), 20 April, 2022.

*Bijjective set-theoretic solutions of the Pentagon Equation*, Al@Bicocca take-away, University of Milan – Bicocca, Milan (Italy), 12 November 2021.

*Set-theoretic solutions of the Yang-Baxter equation, skew braces and regular subgroups*, University of Exeter (UK), 11 November 2021.

*Regular subgroups and left semi-braces*, ALGB Seminar, Vrije Universiteit Brussel (Belgium), 31 October 2018.

*Regular subgroups of the affine group, Seminar Algebra*, Seminar Algebra, University of Warsaw (Poland) 24 November 2016.

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| RESEARCH VISITS | Research In Residence @ CIRM, France<br>(with G. Janssens) – 1 week                                    | <b>01/05/2023 – 06/05/2023</b> |
|                 | Postdoctoral Researcher Visiting @ Vrije Universiteit Brussel, Belgium<br>(host L. Vendramin) – 1 week | <b>15/01/2023 – 21/01/2023</b> |
|                 | Postdoctoral Researcher Visiting @ Vrije Universiteit Brussel, Belgium<br>(host L. Vendramin) – 1 week | <b>16/05/2022 – 21/05/2022</b> |
|                 | Postdoctoral Researcher Visiting @ Vrije Universiteit Brussel, Belgium<br>(host E. Jespers)– 3 months  | <b>01/09/2018 – 30/11/2018</b> |
|                 | Visiting PhD Student @ University of Warsaw, Poland<br>(host J. Okniński) –1 months                    | <b>15/11/2016 – 20/12/2016</b> |

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| CONFERENCES ORGANISED | <i>BIRS workshop</i><br><i>Skew braces, braids and the Yang-Baxter equation</i><br>Banff International Research Station (Alberta, Canada)<br>(organisers: <b>I. Colazzo</b> , J. Plavnik, E. Rowell, and L. Vendramin) | <b>05/05/2024 - 10/05/2024</b> |
|                       | <i>Groups, rings and the Yang-Baxter equation</i><br>Blankenberge (Belgium), organisers<br>(organisers: <b>I. Colazzo</b> , A. Van Antwerpen, and L. Vendramin)  | <b>19–25/06/2023</b>           |
|                       | <i>Oberwolfach mini-workshop (2309a)</i><br><i>Skew Braces and the Yang-Baxter Equation</i><br>Oberwolfach (Germany), organisers<br>(organisers: <b>I. Colazzo</b> , T. Brzezinski, A. Doikou, and L. Vendramin)       | <b>26/02–03/03/2023</b>        |
|                       | <i>The algebra of the Yang-Baxter equation</i><br>Bedlewo (Poland), member of the organising committee<br>(organisers: <b>I. Colazzo</b> , J. Okniński, and L. Vendramin)  | <b>10–16/07/2019</b>           |

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| OTHER ORGANISATIONAL EXPERIENCES | I also organised two conferences for young researchers in algebras: <i>Conference Young Researchers Algebra Conference 2023</i> (L’Aquila, Italy), and <i>Conference Young Researchers Algebra Conference 2019</i> (Napoles, Italy) |                  |
|                                  | I co-organised (with F. Catino)the <i>Algebra Reading Seminar</i><br>University of Salento, Department of Mathematics and Physics “Ennio De Giorgi”   | <b>2015–2019</b> |

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| GRANTS | <i>The Interplay Between Skew Braces and Hopf-Galois Theory (InterplaySbHG)</i><br>Joint Research Groups (Scheme 3) supported LMS Grants | <b>2021–2022</b><br>£1,500 |
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TEACHING  
EXPERIENCE

**MAGIC (UK)**

*a collaboration of 22 universities, coordinated by the University of Exeter.*

- *Lecturer*

Duties included preparing and delivering lectures, preparing study material and exercises, marking homework and the final assignment.

- *MAGIC111*

A.Y. 2022–23

Introduction to set-theoretic solutions to the Yang-Baxter equation and skew braces

Course for PhD students

**University of Exeter, Exeter, UK**

- *Tutor*

Duties included preparing lectures for tutorial classes, fielding of student inquiries, and marking homework.

- *MTH2010 – Groups, Rings and Fields* (Course Prof M. Saidi)

A.Y. 2022–23

- *MTH1001 – Mathematical structures* (Course Dr G. Marasingha)

A.Y. 2021–22

**University of Salento, Lecce, Italy**

- *Instructor*

Duties included preparing lectures, fielding of student inquiries, and office hours.

- *Mathematics preliminary course*

A.Y. 2017–18

for bachelor’s students in Mathematics and in Physics

- *Teaching assistant*

Duties included preparing lectures for tutorial classes for recitation classes and office hours.

- *Group Theory* (Course Professor F. Catino)

A.Y. 2015–18

- *Algebra II* (Course Professor M. M. Miccoli)

A.Y. 2015–16

- *Tutor*

Duties included preparing lectures for tutorial classes, fielding of student inquiries, and office hours.

- *Algebra I and II* (Course Prof F. Catino and Prof M. M. Miccoli)

A.Y. 2018–19

- *Algebra I* (Course Prof F. Catino)

A.Y. 2016–17

- *Algebra, Exam committee member* (it Cultore della materia)

July 2016 – July 2019

Duties included grading final exams.

REFEREEING  
ACTIVITY

Annales Henri Poincare - A Journal of Theoretical and Mathematical Physics (AHPO), Journal Publicacions Matemàtiques, Journal of the London Mathematical Society (JLMS), International Mathematics Research Notices, Journal of Algebra, Journal of Algebra and its Applications, Communications in Algebra, Rendiconti del Circolo Matematico di Palermo Series 2.

SKILLS

**Programming Languages:** GAP, Python.

**Language:** Italian (native), English (fluent), French (waystage).

REFERENCES

Prof. Nigel Byott

Department of Mathematics

University of Exeter

Exeter, United Kingdom

N.P.Byott@exeter.ac.uk

Prof. Leandro Vendramin

Department of Mathematics

Vrije Universiteit Brussel

Brussels, Belgium

Leandro.Vendramin@vub.be

Prof. Agata Smoktunowicz

School of Mathematics

The University of Edinburgh,

Edinburgh, United Kingdom

A.Smoktunowicz@ed.ac.uk