

# ILARIA COLAZZO

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| CONTACT INFORMATION | Pleinlaan 2, B-1050<br>Vrije Universiteit Brussel<br>Department of Mathematics<br>Brussels, (Belgium)   | ilaria.colazzo@vub.be<br>ilariacolazzo@gmail.com<br>www.ilariacolazzo.info |
| CURRENT POSITION    | <b>Vrije Universiteit Brussel</b> , Brussels, Belgium<br><i>Postdoctoral Fellow</i> Reserch Unit: ALGB – Algebra, Incidence Geometry  |  |
| RESEARCH INTERESTS  | Algebra, set-theoretical solutions of the Yang-Baxter equation, set theoretic solution of the Pentagon equation, algebraic structures linked to solutions (such as braces, cycle sets, semigroups etc.), regular subgroups of the affine group.   |  |
| EDUCATION           | <b>University of Salento</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>July 20, 2017</b>   |
|                     | <b>University of Salento and University of Basilicata</b> , Lecce, Italy<br><i>Department of Mathematics and Physics</i><br>M.S., Mathematics<br>Final mark: 110/110 cum Laude  | <b>October 25, 2012</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>June 15, 2009</b>   |
|                     | <b>University of Salento</b> , Lecce, Italy<br><i>Department of Mathematics and Physics</i><br>B.S., Mathematics<br>Final mark: 110/110 cum Laude   | <b>December 18, 2008</b>   |
| RESEARCH EXPERIENCE | <b>Vrije Universiteit Brussel</b> , Brussels, Belgium,<br><i>Postdoctoral Researcher in Mathematics</i><br>Scientific advisor: Prof. Eric Jespers<br><ul style="list-style-type: none"><li>Studied the algebraic structure of a semi-truss. Deepen the connection between set-theoretic solutions associated to a semi-truss and set-theoretic solutions associated to semi-braces. Classified the involutive solutions of the Pentagon equation.</li></ul>   | <b>01/10/2019 – Present</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<br><ul style="list-style-type: none"><li>Introduced a novel construction technique for set-theoretical solutions of the Yang-Baxter equation that to obtain new classes of involutive and idempotent solutions. This technique led to characterizing completely the solutions associated with a finite semi-brace.</li></ul> | <b>01/12/2017 – 30/11/2018</b>   |
|                     | <b>Vrije Universiteit Brussel</b> , Brussels, Belgium<br>Postdoctoral Researcher Visiting (host Prof. E. Jespers)   | <b>01/09/2018 – 30/11/2018</b>   |
|                     | <b>University of Salento and University of Basilicata</b> , Lecce, Italy<br><i>PhD Student</i><br><ul style="list-style-type: none"><li>Presented new construction techniques (i.e., the Hochschild product and the asymmetric product) for regular subgroups of an affine group using their relationship with braces over a field. Advanced the state-of-the-art of the algebraic structures related to set-theoretical solutions of the Yang-Baxter equation by introducing semi-braces.</li></ul>  | <b>03/03/2014 – 20/07/2017</b>   |

## PUBLICATIONS

- I. Colazzo**, E. Jespers, L. Kubat. Set-Theoretic Solutions of the Pentagon Equation. *Commun. Math. Phys.* (2020). <https://doi.org/10.1007/s00220-020-03862-6>
- I. Colazzo**, A. Van Antwerpen, *The algebraic structure of left semi-trusses*, *J. Pure Appl. Algebra*, 225 (2021) n.2, 106467, <https://doi.org/10.1016/j.jpaa.2020.106467>.
- 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, <https://doi.org/10.1007/s00009-020-1483-y>.
- 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, <https://doi.org/10.1016/j.jpaa.2019.07.012>.
- F. Catino, **I. Colazzo**, P. Stefanelli, *Skew left braces with non-trivial annihilator*, *J. Algebra Appl.* 18 (2019) n.2, 1950033, 23 pp, <https://doi.org/10.1142/S0219498819500336>.
- F. Catino, **I. Colazzo**, P. Stefanelli: *Semi-braces and the Yang–Baxter equation*, *J. Algebra*, **483**, (2017), 163–187, <https://doi.org/10.1016/j.jalgebra.2017.03.035>.
- F. Catino, **I. Colazzo**, P. Stefanelli: *Regular subgroups of the affine group and asymmetric product of radical braces*, *J. Algebra*, **455**, (2016), 164–182, <http://dx.doi.org/10.1016/j.jalgebra.2016.01.038>.
- F. Catino, **I. Colazzo**, P. Stefanelli: *On regular subgroups of the affine group*, *Bull. Aust. Math. Soc.*, **91** (2015), 76–85, <http://dx.doi.org/10.1017/S000497271400077X>.

## SELECTED TALKS

- Braces; between regular subgroups and solutions of the Yang–Baxter equation: Workshop Algebra for Cryptography*, 10–11 October, 2019 (Invited talk).
- The matched product of shelves: International Conference Advances in Group Theory and Applications 2019*, Lecce (Italy), June 25–28, 2019.
- Regular subgroups and left semi-braces*, ALGB Seminar, Vrije Universiteit Brussel (Belgium), October 31, 2018 (Invited talk).
- The matched product of the solutions of the Yang–Baxter equation: Meeting Noncommutative and non-associative structures, braces and applications*, 11–15 March, 2018 (Invited talk).
- Semi-braces and the Yang–Baxter equation*, International Conference *Groups, Rings and the Yang–Baxter equation*: Spa (Belgium), June 18–24, 2017.
- Radical braces and the Yang–Baxter equation*, International Conference *Conference on Rings and Polynomials*: Graz (Austria), July 3–8, 2016.

## OTHER ACTIVITIES

- *Member of the Scientific Committee* **2019 – present**
  - International Conference *Young Researchers Algebra Conference 2019* held in Naples (Italy) on September 16–18, 2019 (with M. Brescia, M. Ferrara, P. Stefanelli, and M. Trombetti)
- *Member of the Organizing Committee* **2015 – present**
  - International Conference *Advances in Group Theory and Applications 2019* held in Lecce (Italy) on June 25–28, 2019 (with M. Brescia, M. Ferrara, M. M. Miccoli, P. Stefanelli and M. Trombetti)
  - International Conference *Advances in Group Theory and Applications 2017* held in Lecce (Italy) on September 5–8, 2017 (with M. M. Miccoli, P. Stefanelli and M. Trombetti)
  - International Conference *Advances in Group Theory and Applications 2015* held in Porto Cesareo, Lecce (Italy) on June 16–19, 2015 (with M. M. Miccoli and P. Stefanelli)
- *Co-organizer of the Department seminar* **2015 – 2019**
  - *Algebra Reading Seminar*, University of Salento, Department of Mathematics and Physics “Ennio De Giorgi” (with F. Catino)
- *Representative Student* **2010 – 2012**
- *Representative Ph.D. Student* **2014 – 2016**