

Arne Van Antwerpen

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Born: July 07, 1993—Edegem, Belgium
Nationality: Belgian

Current position

Post-doctoral assistant, Department of Mathematics: Algebra and Geometry, UGent, Gent

Areas of specialization

Yang-Baxter equation • Group Theory • Ring Theory

Positions held/obtained

2025-2028	FWO Senior post doctoral fellow, Vrije Universiteit Brussel, Brussel
2023-2025	Post-doctoral assistant, Universiteit Gent, Gent
2020-2023	FWO junior post doctoral fellow, Vrije Universiteit Brussel, Brussel
2016-2020	FWO aspirant, Vrije Universiteit Brussel, Brussel

Education

2014	BSc in Mathematics, Universiteit Antwerpen
2016	MSc in Mathematics, Universiteit Antwerpen
2020	PhD in Science (Mathematics), Vrije Universiteit Brussel

Grants

PERSONAL GRANTS

2025-2028	Grant - FWO senior post-doctoral fellow - Fonds Wetenschappelijk Onderzoek Vlaanderen, Belgium (yearly salary of 70.000 euros + 4000 euros yearly travel grant)
2020-2023	Grant - FWO junior post-doctoral fellow - Fonds Wetenschappelijk Onderzoek Vlaanderen, Belgium (yearly salary of 65.000 euros + 4000 euros yearly travel grant)
2016-2020	Grant - FWO Aspirant - Fonds Wetenschappelijk Onderzoek Vlaanderen, Belgium (yearly salary of 46.000 euros + 3720 euros yearly travel grant)

CONFERENCE FUNDING

2022	Grant - Conference funding FWO for conference “Groups, rings and Yang-Baxter equation” (joint w. I. Colazzo and L. Vendramin) - 5000 euro
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2022 Grant - Conference funding Compositio Mathematica for conference “Groups, rings and Yang-Baxter equation” (joint w. I. Colazzo and L. Vendramin) - 5000 euro

PHD GRANTS

2021-2025 Grant for S.Trappeniers - FWO Aspirant - Fonds Wetenschappelijk Onderzoek Vlaanderen, Belgium (yearly salary of 46.000 euros + 3720 euros yearly travel grant)

2023-2027 Grant for S.Properzi - FWO Aspirant - Fonds Wetenschappelijk onderzoek Vlaanderen, Belgium (yearly salary of 46.000 euros + 3720 euros yearly travel grant).

Publications & talks

My 5 most important publications are highlighted by \star .

JOURNAL ARTICLES

- 2023 1. \star Colazzo Ilaria, Jespers Eric, Kubat Lukasz, Van Antwerpen Arne, Verwimp Charlotte (2023), “Finite idempotent set-theoretic solutions of the Yang-Baxter equation”, *International Mathematics Research Notices*, doi: 10.1093/imrn/rnad183
- 2023 2. \star Jespers Eric, Van Antwerpen Arne, Vendramin Leandro (2023), “Nilpotency of skew braces and multipermutation solutions of the Yang-Baxter equation”, *Communications in Contemporary Mathematics* 25 (09), 2250064.
- 2023 3. Cedó Ferran, Jespers Eric, Kubat Lukasz, Van Antwerpen Arne, Verwimp Charlotte (2020), “On various types of nilpotency of the structure monoid and group of a set-theoretic solution of the Yang-Baxter equation”, *Journal of Pure and Applied Algebra* 227 (2): 107194
- 2022 4. Colazzo Ilaria, Jespers Eric, Van Antwerpen Arne, Verwimp Charlotte (2021), “Left non-degenerate set-theoretic solutions of the Yang-Baxter Equation and semitrusses”, *Journal of Algebra* 610: 409-462
- 2020 5. \star Jespers Eric, Kubat Lukasz, Van Antwerpen Arne, Vendramin Leandro (2021), “Radical and weight of skew braces and their applications to structure groups of solutions of the Yang-Baxter equation”, *Advances in Mathematics* 385: 107767
- 2020 6. Jespers Eric, Kubat Lukasz, Van Antwerpen Arne (2020), “Corrigendum et addendum to The structure monoid and algebra of a non-degenerate set-theoretic solution of the Yang-Baxter equation”, *Transactions of the American Mathematical Society* 373 (6): 4517-4521
- 2019 7. Colazzo Ilaria, Van Antwerpen Arne (2019), “The algebraic structure of left semi-trusses”, *Journal of Pure and Applied Algebra* 225 (2): 106467
- 2019 8. \star Jespers Eric, Kubat Lukasz, Van Antwerpen Arne, Vendramin Leandro (2019), “Factorizations of skew braces”, *Mathematische Annalen* 375 (3-4): 1649-1663
- 2019 9. \star Jespers Eric, Kubat Lukasz, Van Antwerpen Arne (2019), “The structure monoid and algebra of a non-degenerate set-theoretic solution of the Yang-Baxter equation”, *Transactions of the American Mathematical Society* 372 (10): 7191-7223
- 2019 10. Jespers Eric, Van Antwerpen Arne (2019), “Left semi-braces and solutions of the Yang-Baxter equation”, *Forum Mathematicum* 31 (1): 241-263
- 2018 11. Van Antwerpen Arne (2018), “Coleman Automorphisms of finite groups and their minimal normal subgroups”, *Journal of Pure and Applied Algebra* 222 (11): 3379-3394

PRE-PRINT

2023 Colazzo Ilaria, Jespers Eric, Kubat Lukas, Van Antwerpen Arne, “Structure algebras of finite set-theoretic solutions of the Yang-Baxter equation”, ArXiv:2305.06023.

2023 Properzi Silvia, Van Antwerpen Arne, “A common divisor graph for skew braces”, ArXiv:2306.12415.

SELECTION OF TALKS

- 2023 Non-involutive cabling of set-theoretic solutions of the Yang-Baxter equation, Groups, Rings, Lie and Hopf Algebras V, Harlow, UK
- 2023 Centrally nilpotent skew braces, Young Researchers in Algebra conference, L'Aquila, Italy
- 2023 Centrally nilpotent skew braces, Groups, rings and the Yang-Baxter equation, Blankenberge, Belgium
- 2023 Nilpotency of skew braces: an overview, Oberwolfach mini-workshop: skew braces and the Yang-Baxter equation, Oberwolfach, Germany
- 2022 The structure algebra of set-theoretic solutions to the Yang-Baxter equation, Groups and Algebras in Bicocca 2022, Milan, Italy
- 2022 Nilpotency in skew braces and set-theoretic solutions to the Yang-Baxter equation, MSU-IIT Seminar in Algebra, online (MSU-ITT, Philippines)
- 2022 Skew braces, the Yang-Baxter equation and non-associative algebras, Workshop on non-associative algebras 2022, Covilha, Portugal
- 2022 Skew braces and the Yang-Baxter equation, Algebra, Geometry and Physics seminar, joint MPIM and HU Berlin, Berlin, Germany
- 2022 Central nilpotency of skew braces, Algebra Seminar Edinburgh University, Edinburgh, UK
- 2022 Central nilpotency of skew braces, Algebra Seminar Università del Salento, online (Lecce, Italy)
- 2019 The structure monoid of left non-degenerate solutions to the Yang-Baxter equation, Lecce Reading Seminar, Lecce, Italy
- 2019 Factorizations of skew left braces, Oberwolfach mini-workshop: Algebraic tools to solve YBE, Oberwolfach, Germany
- 2018 Left semi-braces and solutions of the Yang-Baxter equation, II Joint meeting Spain-Brazil in Mathematics, Cadiz, Spain
- 2018 Left semi-braces and solutions of the Yang-Baxter equation, Noncommutative and Non-associative structures, braces and applications, Malta
- 2017 Left semi-braces and solutions of the Yang-Baxter equation, The Antwerp Algebra Seminar, Antwerp, Belgium
- 2017 Coleman automorphisms of finite groups and their minimal normal subgroups, AGTA: Young Researchers in Algebra, Naples, Italy
- 2017 Coleman automorphisms of finite groups and their minimal normal subgroups, Groups, Rings, Group rings and the Yang-Baxter equation, Spa, Belgium
- 2017 Coleman automorphisms of finite groups and their minimal normal subgroups, AGTA: Advances in Group Theory and Applications, Lecce, Italy
- 2017 Coleman automorphisms of finite groups and their minimal normal subgroups, Groups, Rings and Related Topics, Khorfakkan, United Arab Emirates

UPCOMING TALKS

- 06/2024 Invited speaker, Yang-Baxter algebras, conference at Heriot-Watt, Edinburgh, UK

Evaluator selection committee

- 2019 For professor position "Discrete techniques in data science" at VUB
- 2020 For professor position "Algebra: groups, rings or the Yang-Baxter equation" at VUB
- 2023 For PhD-mandate (6 years) at VUB

Referee for international journals

Algebras and Representation Theory
Canadian Mathematical Bulletin
Communications in Algebra
International Mathematics Research Notices
Journal of Algebra and its Applications
Journal of Combinatorial theory, series A
Journal of London Mathematical Society
Journal of Pure and Applied Algebra
Proceedings of the Edinburgh Mathematical Society
Publicacions Matemàtiques

Evaluator PhD committee

2022 Charlotte Verwimp, Set-theoretic solutions of the Yang-Baxter equation and associated algebraic structures, VUB

Teaching

LECTURES

2023-current Linear Algebra and Geometry I (Ba 1 Mathematics and Physics, UGent)
2023-current Algebra II: Galois theory (Ba 3 Mathematics, UGent)
2020-2023 Introduction to Group Theory (Ba 1 Mathematics, VUB)
occasionally Replacing Prof. Jespers for lectures Associative Algebra

TUTORIAL SESSIONS

2022-2023 Basic skills in Mathematics (Ba 1 of all Sciences, VUB)
2022-2023 Mathematical Statistics (Ba 3 Mathematics, VUB)
2017-2021 Ring and Module Theory (Ba 2 Mathematics, VUB)
2017-2020 Probability Theory (Ba 2 Mathematics, VUB)
2016-2023 Linear Algebra (Ba 1 Biology, VUB)
2016-2017 Discrete Mathematics (Ba 1 Mathematics, VUB)
2016-2017 Calculus (Ba 1 Biology, VUB)

Mentoring

BACHELOR

2021 B. D'Hauwer - Unique product groups and the unit conjecture
2021 S. Croux - Embedding semigroups in groups
2020 S. Frycia - To be nil or not to be nil: the extraordinary counterexample of A. Smoktunowicz
2017 (joint with E. Jespers) Jente Bosmans - Quandles and their automorphisms

MASTER

2020-2021 S. Trappeniers - Skew braces and the Yang-Baxter equation: an exposition on structure theorems
2017-2018 (joint with E. Jespers) C. Verwimp - Braces and the Yang-Baxter equation

PHD

2021-current (joint with L. Vendramin) S. Trappeniers - The combinatorics of set-theoretic solutions to the Yang-Baxter equation and related algebraic structures - FWO Aspirant (2021-2025)

Administrative tasks

AT VRIJE UNIVERSITEIT BRUSSEL

2017-2019,2020-current PhD and Post-doc representative in RWIDS (department council)

2017-current PhD and Post-doc representative in ORWIS (education council for mathematics) (secretary since 2019)

2019-current PhD and Post-doc representative in faculty education council

2020-current PhD and Post-doc representative in faculty council

2021-current PhD and Post-doc representative in faculty board

2020-current PhD and Post-doc representative in education quality council

AT NATUUR EN WETENSCHAP VZW (YOUTH ORGANIZATION POPULARIZING SCIENCE)

2014-current Member of the Board

2018-current Secretary of the Board, responsible for the administrative personell

Research stays

2022 Edinburgh, UK, Visiting A. Smoktunowicz between 15th of November and 22nd of November

2022 Berlin, Germany, Visiting P. Tamaroff between 7th of November and 12th of November

2019 Buenos Aires, Argentina, visiting L. Vendramin between 23rd of September and 8th of October

2019 Shanghai, China, visiting L. Vendramin, between 5th April and 17th April

2019 Lecce, Italy, visiting F. Catino, I. Colazzo and P. Stefanelli between 4th of February and 1st of March

Organized conferences

2023 local organizer: Doctor honoris causa seminar for Prof. Efim Zelmanov, VUB

2023 main organizer: Groups, rings and the Yang-Baxter equation, Blankenberge, Belgium

2019 local organizer: Groups, rings and associated structures, Spa, Belgium

2017 local organizer: Groups, rings and the Yang-Baxter equation, Spa, Belgium

Language proficiency

Dutch, native speaker

English, fluent (C1 certificate)

French, intermediate

Italian, intermediate