# Leandro Vendramin

Vrije Universiteit Brussel – WIDS – Pleinlaan 2, Brussels B-1050, Belgium

📞 (+32) 345 678 901   •   ✉ Leandro.Vendramin@vub.be

🌐 www.leandrovendramin.org   •   🆔 0000-0003-0954-7785   •   ⌨ vendramin

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## Education

**2010**: Ph.D. in Mathematics. Universidad de Buenos Aires, Argentina. Thesis: Nichols algebras over non-abelian groups. Advisor: M. Graña.

**2004**: *Licenciado en Cs. Matemáticas.* Universidad de Buenos Aires, Argentina.

## Positions

**2021**: Associate professor. Vrije Universiteit Brussel, Belgium.

**2019–2021**: Visiting Assistant Professor of Mathematics. New York University, Shanghai, China.

**2014–2021**: Assistant Professor. Universidad de Buenos Aires, Argentina.

**2012–2021**: Researcher. Consejo Nacional de Investigaciones Científicas y Técnicas, Argentina.

**2012–2018**: Regular Associate. Abdus Salam International Centre for Theoretical Physics. Trieste, Italy.

## Editorial activity

**2024**: Open Mathematics

**2023**: Bulletin of the Belgian Mathematical Society – Simon Stevin.

## Talks

**01/2023**: Skew braces, cabling and indecomposable solutions to the Yang-Baxter equation, Categories, Rings and Modules, a conference in honor of Alberto Facchini, Padova, Italy.

**06/2022**: Left-ordered groups, Garside groups and structure groups of solutions, Algebra days in Caen, France.

**01/2022**: Radical rings, braces and the Yang—Baxter equation. Braces in Bracelets Bay. LMS Regional Meeting. Swansea.

**08/2021**: Radical rings, braces and the Yang—Baxter equation. ECOLE CIMPA: Non-associative algebras and their applications, Madagascar.

**08/2019**: New developments in radical rings. Pure Maths Colloquium, University of St Andrews, UK.

**07/2019**: On the classification of Nichols algebras. MAXIMALS Seminar, University of Edinburgh, UK.

**06/2019**: Skew braces and the Yang–Baxter equation. Groups, rings and associated structures. Spa, Belgium.

**02/2018**: Radical rings, braces and the Yang-Baxter equation. Exeter, UK.

**04/2017**: Set-theoretical solutions of the Yang–Baxter equation. MIT, Massachusetts, USA.

**04/2017**: Nichols algebras. Warsaw University, Poland.

The full list of talks, including slides and videos, is available on my webpage.

## Prizes and fellowships

**2018**: Alexander von Humboldt fellowship (3 months). Host: I. Heckenberger.

**2017**: Postdoctoral fellowship (4 months), ERC Advanced Grant 320974. Host: A. Smoktunowicz.

**2016**: Argentinian Academy of Sciences – Young researcher award.

**2012**: Alexander von Humboldt fellowship (12 months). Host: I. Heckenberger.

**2011**: DAAD short-term postdoctoral fellowship (4 months).

**2010**: Conicet postdoctoral fellowship (24 months).

**2009**: DAAD short-term fellowship (3 months).

**2005**: Conicet Ph.D. fellowship (60 months).

## Conferences organized

**2024**: Banff Workshop (24w5201): Skew Braces, Braids and the Yang-Baxter Equation. Organizers: I. Colazzo, J. Plavnik, E. Rowell, L. Vendramin. Alberta, Canada. May 5–10.

**2024**: Oberwolfach mini-workshop (2405b): Bridging number theory and Nichols Algebras via deformations. Organizers: G. Carnnovale, I. Heckenberger, L. Vendramin. Germany. January 28 to February 2.

**2023**: Groups, rings and the Yang–Baxter equation. Organizers: I. Colazzo, A. Van Antwerpen, L. Vendramin. Blankenberge, Belgium. June 19– 23.

**2023**: Oberwolfach mini-workshop (2309a): Skew braces and the Yang–Baxter equation. Organizers: T. Brzezinski, I. Colazzo, A. Doikou, L. Vendramin. Germany. February 26 to March 4.

**2022**: The algebra of the Yang–Baxter equation. Organizers: I. Colazzo, J. Okninski, L. Vendramin. Stefan Banach International Mathematical Center, Będlewo, Poland. July 10–15.

**2019**: Oberwolfach mini-workshop (1946a): Algebraic tools for solving the Yang-Baxter equation. Organizers: E. Jespers, V. Lebed, W. Rump, L. Vendramin. Germany. November 10–16.

**2019**: Workshop on quantum symmetries. Organizers: I. Angiono, A. Solotar, L. Vendramin. ICTP-SAIFR, São Pablo, Brazil. October 16–18.

See my research team's webpage for other conferences I organized.

## Grants

**2023**: G004124N. Fonds Wetenschappelijk Onderzoek (FWO) – Vlaanderen. Belgium (310000 EUR).

**2021**: OZR3762. Vrije Universiteit Brussel, Belgium (100000 EUR).

**2017**: MathAmSud. Chile–France–Argentina (12000 EUR).

**2016**: PICT 2016-2481. Agencia Nacional de Promoción Científica y Tecnológica, Argentina.

**2014**: PICT 2014-1376. Agencia Nacional de Promoción Científica y Tecnológica, Argentina.

**2013**: UBACyT 20020110300037. Universidad de Buenos Aires, Argentina.

## Mentoring

### Current Ph.D. students

**2023**: Davide Ferri. Co-supervised with A. Ardizzoni.

**2022**: Silvia Properzi. Supported by FWO.

**2021**: Thomas Letourmy. Supported by FRNS. Co-supervised with J. Vercruysse.

**2021**: Senne Trappeniers. Supported by FWO. Co-supervised with A. Van Antwerpen.

**2019**: Santiago Ramírez. Universidad de Buenos Aires. Supported by Conicet.

**2018**: Emiliano Acri. Universidad de Buenos Aires. Supported by Conicet.

### Former Ph.D. students

**2018–2022**: Charlotte Verwimp. Supported by FWO. Co-supervised with E. Jespers.

### Postdocs

**2023–2024**: Carsten Dietzel. Supported by the Alexander Von Humboldt Foundation.
**2021–2025**: Kevin Piterman. Supported by FWO.
**2020–2027**: Arne Van Antwerpen. Supported by FWO.
**2019–2020**: Marco Bonatto. Universidad de Buenos Aires. Supported by Conicet.

# Teaching

### Vrije Universiteit Brussel

Group theory, Ring and module theory, Non-commutative algebra, Associative algebra, Galois theory, Representation theory.

### New York University

Differential geometry (MATH-SHU 377), Linear algebra (MATH-SHU 170), Algebra (MATH-UA 343), Honors algebra I (MATH-SHU 348).

### Universidad de Buenos Aires

Advanced linear algebra, Calculus 2, Numerical analysis for biology, Differential geometry, Advanced mathematics for physics, Advanced group theory, Non-commutative algebra, Knot theory, Associative algebra, History of mathematics, Algebra I, Algebra II.

### From 2002 to 2014, (Under)graduate teaching assistant

Precalculus, Calculus 1 and 2, Basic linear algebra, Advanced linear algebra, Introduction to mathematical analysis, Advanced calculus, Introduction to numerical analysis, Mathematical analysis for biology, Numerical analysis for biology, Advanced mathematics for physics, Algebra II (groups, rings, modules).

# Full list of publications

[1]  I. Heckenberger, E. Meir, and L. Vendramin. Finite-dimensional Nichols algebras of simple Yetter–Drinfeld modules (over groups) of prime dimension. *Adv. Math.* 444 (2024), Paper No. 109637. DOI: 10.1016/j.aim.2024.109637.

[2]  V. Lebed, S. Ramírez, and L. Vendramin. Involutive Yang–Baxter: cabling, decomposability, and Dehornoy class. *Rev. Mat. Iberoam.* 40.2 (2024), pp. 623–635. DOI: 10.4171/rmi/1438.

[3]  T. Letourmy and L. Vendramin. Schur covers of skew braces. *J. Algebra* 644 (2024), pp. 609–654. DOI: 10.1016/j.jalgebra.2024.01.021.

[4]  L. Vendramin. What is... a skew brace? *Notices Amer. Math. Soc.* 71.1 (2024), pp. 65–67.

[5]  T. Brzeziński, I. Colazzo, A. Doikou, and L. Vendramin. Mini-Workshop: Skew Braces and the Yang–Baxter Equation. *Oberwolfach Rep.* 20.1 (2023), pp. 537–563. DOI: 10.4171/owr/2023/9.

[6]  C. Dietzel, P. Menchón, and L. Vendramin. On the enumeration of finite $L$-algebras. *Math. Comp.* 92.341 (2023), pp. 1363–1381. DOI: 10.1090/mcom/3814.

[7]  I. Heckenberger and L. Vendramin. Bosonization of curved Lie bialgebras. *Bull. Belg. Math. Soc. Simon Stevin* 30.5 (2023), pp. 577–600. DOI: 10.36045/j.bbms.221202.

[8]  E. Jespers, A. Van Antwerpen, and L. Vendramin. Nilpotency of skew braces and multipermutation solutions of the Yang–Baxter equation. *Commun. Contemp. Math.* 25.09 (2023), Paper No. 2250064. DOI: 10.1142/S021919972250064X.

[9]  T. Letourmy and L. Vendramin. Isoclinism of skew braces. English. *Bull. Lond. Math. Soc.* 55.6 (2023), pp. 2891–2906. DOI: 10.1112/blms.12900.

[10]  Ö. Akgün, M. Mereb, and L. Vendramin. Enumeration of set-theoretic solutions to the Yang-Baxter equation. *Math. Comp.* 91.335 (2022), pp. 1469–1481. DOI: 10.1090/mcom/3696.

[11] A. Konovalov, A. Smoktunowicz, and L. Vendramin. Erratum to the paper "On skew braces and their ideals". *Exp. Math.* 31.1 (2022), p. 346. DOI: 10.1080/10586458.2021.1980466.

[12] V. Lebed and L. Vendramin. Reflection equation as a tool for studying solutions to the Yang-Baxter equation. *J. Algebra* 607 (2022), pp. 360–380. DOI: 10.1016/j.jalgebra.2021.02.002.

[13] S. Ramírez and L. Vendramin. Decomposition theorems for involutive solutions to the Yang-Baxter equation. *Int. Math. Res. Not. IMRN* 22 (2022), pp. 18078–18091. DOI: 10.1093/imrn/rnab232.

[14] L. Vendramin. Knots, quandles and homology. *Gac. R. Soc. Mat. Esp.* 25.1 (2022), pp. 85–110.

[15] E. Jespers, Ł. Kubat, A. Van Antwerpen, and L. Vendramin. Radical and weight of skew braces and their applications to structure groups of solutions of the Yang-Baxter equation. *Adv. Math.* 385 (2021), Paper No. 107767, 20. DOI: 10.1016/j.aim.2021.107767.

[16] A. Konovalov, A. Smoktunowicz, and L. Vendramin. On skew braces and their ideals. *Exp. Math.* 30.1 (2021), pp. 95–104. DOI: 10.1080/10586458.2018.1492476.

[17] E. Acri, R. Lutowski, and L. Vendramin. Retractability of solutions to the Yang-Baxter equation and $p$-nilpotency of skew braces. *Internat. J. Algebra Comput.* 30.1 (2020), pp. 91–115. DOI: 10.1142/S0218196719500656.

[18] A. Smoktunowicz, L. Vendramin, and R. Weston. Combinatorial solutions to the reflection equation. *J. Algebra* 549 (2020), pp. 268–290. DOI: 10.1016/j.jalgebra.2019.12.012.

[19] F. Cedó, A. Smoktunowicz, and L. Vendramin. Skew left braces of nilpotent type. *Proc. Lond. Math. Soc. (3)* 118.6 (2019), pp. 1367–1392. DOI: 10.1112/plms.12209.

[20] I. Heckenberger and L. Vendramin. PBW deformations of a Fomin-Kirillov algebra and other examples. *Algebr. Represent. Theory* 22.6 (2019), pp. 1513–1532. DOI: 10.1007/s10468-018-9830-4.

[21] E. Jespers, Ł. Kubat, A. Van Antwerpen, and L. Vendramin. Factorizations of skew braces. *Math. Ann.* 375.3-4 (2019), pp. 1649–1663. DOI: 10.1007/s00208-019-01909-1.

[22] V. Lebed and L. Vendramin. On structure groups of set-theoretic solutions to the Yang-Baxter equation. *Proc. Edinb. Math. Soc. (2)* 62.3 (2019), pp. 683–717. DOI: 10.1017/s0013091518000548.

[23] L. Vendramin. Problems on skew left braces. *Adv. Group Theory Appl.* 7 (2019), pp. 15–37. DOI: 10.32037/agta-2019-003.

[24] D. Bachiller, F. Cedó, and L. Vendramin. A characterization of finite multipermutation solutions of the Yang-Baxter equation. *Publ. Mat.* 62.2 (2018), pp. 641–649. DOI: 10.5565/PUBLMAT6221809.

[25] J. A. Guccione, J. J. Guccione, and L. Vendramin. Yang-Baxter operators in symmetric categories. *Comm. Algebra* 46.7 (2018), pp. 2811–2845. DOI: 10.1080/00927872.2017.1399411.

[26] A. Smoktunowicz and L. Vendramin. On skew braces (with an appendix by N. Byott and L. Vendramin). *J. Comb. Algebra* 2.1 (2018), pp. 47–86. DOI: 10.4171/JCA/2-1-3.

[27] I. Angiono, C. Galindo, and L. Vendramin. Hopf braces and Yang-Baxter operators. *Proc. Amer. Math. Soc.* 145.5 (2017), pp. 1981–1995. DOI: 10.1090/proc/13395.

[28] A. García Iglesias and L. Vendramin. An explicit description of the second cohomology group of a quandle. *Math. Z.* 286.3-4 (2017), pp. 1041–1063. DOI: 10.1007/s00209-016-1794-7.

[29] L. Guarnieri and L. Vendramin. Skew braces and the Yang-Baxter equation. *Math. Comp.* 86.307 (2017), pp. 2519–2534. DOI: 10.1090/mcom/3161.

[30] I. Heckenberger and L. Vendramin. A classification of Nichols algebras of semisimple Yetter-Drinfeld modules over non-abelian groups. *J. Eur. Math. Soc. (JEMS)* 19.2 (2017), pp. 299–356. DOI: 10.4171/JEMS/667.

[31] I. Heckenberger and L. Vendramin. The classification of Nichols algebras over groups with finite root system of rank two. *J. Eur. Math. Soc. (JEMS)* 19.7 (2017), pp. 1977–2017. DOI: 10.4171/JEMS/711.

[32] V. Lebed and L. Vendramin. Homology of left non-degenerate set-theoretic solutions to the Yang-Baxter equation. *Adv. Math.* 304 (2017), pp. 1219–1261. DOI: 10.1016/j.aim.2016.09.024.

[33] L. Vendramin. Doubly transitive groups and cyclic quandles. *J. Math. Soc. Japan* 69.3 (2017), pp. 1051–1057. DOI: 10.2969/jmsj/06931051.

[34] W. E. Clark, M. Saito, and L. Vendramin. Quandle coloring and cocycle invariants of composite knots and abelian extensions. *J. Knot Theory Ramifications* 25.5 (2016), pp. 1650024, 34. DOI: 10.1142/S0218216516500243.

[35] V. Lebed and L. Vendramin. Cohomology and extensions of braces. *Pacific J. Math.* 284.1 (2016), pp. 191–212. DOI: 10.2140/pjm.2016.284.191.

[36] L. Vendramin. Extensions of set-theoretic solutions of the Yang-Baxter equation and a conjecture of Gateva-Ivanova. *J. Pure Appl. Algebra* 220.5 (2016), pp. 2064–2076. DOI: 10.1016/j.jpaa.2015.10.018.

[37] J. Dong, S. Natale, and L. Vendramin. Frobenius property for fusion categories of small integral dimension. *J. Algebra Appl.* 14.2 (2015), pp. 1550011, 17. DOI: 10.1142/S0219498815500115.

[38] I. Heckenberger, A. Lochmann, and L. Vendramin. Nichols algebras with many cubic relations. *Trans. Amer. Math. Soc.* 367.9 (2015), pp. 6315–6356. DOI: 10.1090/S0002-9947-2015-06231-X.

[39] I. Heckenberger and L. Vendramin. Nichols algebras over groups with finite root system of rank two III. *J. Algebra* 422 (2015), pp. 223–256. DOI: 10.1016/j.jalgebra.2014.09.013.

[40] I. Heckenberger and L. Vendramin. Nichols algebras over groups with finite root system of rank two II. *J. Group Theory* 17.6 (2014), pp. 1009–1034. DOI: 10.1515/jgth-2014-0024.

[41] F. Fantino and L. Vendramin. On twisted conjugacy classes of type D in sporadic simple groups. *Hopf algebras and tensor categories*. Vol. 585. Contemp. Math. Amer. Math. Soc., Providence, RI, 2013, pp. 247–259. DOI: 10.1090/conm/585/11616.

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[44] L. Vendramin. On the classification of quandles of low order. *J. Knot Theory Ramifications* 21.9 (2012), pp. 1250088, 10. DOI: 10.1142/S0218216512500885.

[45] N. Andruskiewitsch, F. Fantino, G. A. García, and L. Vendramin. On Nichols algebras associated to simple racks. *Groups, algebras and applications*. Vol. 537. Contemp. Math. Amer. Math. Soc., Providence, RI, 2011, pp. 31–56. DOI: 10.1090/conm/537/10565.

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[50] N. Andruskiewitsch, F. Fantino, G. A. García, and L. Vendramin. On twisted homogeneous racks of type D. *Rev. Un. Mat. Argentina* 51.2 (2010), pp. 1–16.

[51] N. Andruskiewitsch, F. Fantino, M. Graña, and L. Vendramin. Pointed Hopf algebras over some sporadic simple groups. *C. R. Math. Acad. Sci. Paris* 348.11-12 (2010), pp. 605–608. DOI: 10.1016/j.crma.2010.04.023.

[52] S. Freyre, M. Graña, and L. Vendramin. On Nichols algebras over $PGL(2,q)$ and $PSL(2,q)$. *J. Algebra Appl.* 9.2 (2010), pp. 195–208. DOI: 10.1142/S0219498810003823.

[53] S. Freyre, M. Graña, and L. Vendramin. On Nichols algebras over $SL(2,q)$ and $GL(2,q)$. *J. Math. Phys.* 48.12 (2007), pp. 123513, 11. DOI: 10.1063/1.2821614.