

Curriculum Vitæ

Personal Data

Name: Victoria LEBED

Contact Information

E-mail: lebed (at) unicaen.fr
Web page: <http://lebed.users.lmno.cnrs.fr>
Professional address: Laboratoire de Mathématiques Nicolas Oresme,
Université de Caen – Normandie,
BP 5186, 14032 Caen Cedex, France

Education and Professional Experience

- 2018- *Maître de conférences* (a permanent research and teaching position) at **University of Caen – Normandie** (France)
- 2016-18 Research Fellow at **Trinity College Dublin** (TCD), School of Mathematics (Ireland), funding: **Hamilton Fellowship**, mentor: V. Dotsenko
- 2014-16 Postdoc at **University of Nantes**, Laboratoire de Mathématiques Jean Leray (France), funding: **Fellowship of the Lebesgue Center of Mathematics**, mentor: F. Wagemann
- 2013-14 Postdoc at **Osaka City University Advanced Mathematical Institute** (Japan), funding: **JSPS Fellowship**, mentor: S. Kamada
- 2012-13 Teaching and Research Fellow (*ATER*) at **Paris 7 University**, IMJ–PRG (France)
- 2009-12 **Ph.D.** in Mathematics, **Paris 7 University**, advisor: Marc Rosso, title: Braided Objects: Unifying Algebraic Structures and Categorifying Virtual Braids
- 2006-09 **B.Sc.** and **M.Sc.** in Mathematics, **ENS + Paris 7 University**, distinction: *très bien* (the highest)
- 2006 Admission to **ENS Ulm** (École Normale Supérieure, Paris) via the *Sélection Internationale* program
- 2004-06 Research Assistant at the **Academy of Sciences of the Republic of Belarus**, project: elaboration of electronic signature procedures based on elliptic curve theory
- 2003-06 Undergraduate studies, **Belarusian State University**, Faculty of Applied Mathematics and Computer Science (Belarus)

Prizes, Awards, Grants

- 2023-24 International Emerging Actions grant, CNRS, EUR 6000
- 2019 PEPS grant (Projet Exploratoire de Premier Soutien), CNRS, EUR 3500
- 2017 OCAMI Association Special Prize (Japan)
- 2006 First prize at the IMC (International Mathematics Competition for university students), Odessa (Ukraine)
- 2005 Grand first prize at the IMC, Blagoevgrad (Bulgaria)
- 2004 Gold medal at the ACM-ICPC (the ACM International Collegiate Programming Contest), Prague (Czech Republic)
- 2003 Gold medal at the IMO (International Mathematical Olympiad), Tokyo (Japan)
- 2002 Silver medal at the IMO, Glasgow (UK)

Publications

1. (With S. Ramírez and L. Vendramin) Involutive Yang–Baxter: cabling, decomposability, Dehornoy class, *arXiv:2209.02041*
2. (With P. Bellingeri and H. Chemin) Cactus groups, twin groups, and right-angled Artin groups, *arXiv:2209.08813*
3. The word problem for Hecke–Kiselman monoids of type A_n and \tilde{A}_n . *arXiv:2102.08647*
4. (With Markus Szymik) The homology of permutation racks. *To appear in Math. Z.*
5. (With S. Covez, M. Farinati and D. Manchon) Bialgebraic Approach to the Cohomology of Racks and Set-Theoretic Solutions to the YBE. *To appear in Algebr. Geom. Topol.*
6. (With Leandro Vendramin) Reflection equation as a tool for studying solutions to the Yang–Baxter equation. *J. Algebra* 607 (2022), 360–380.
7. (With Arnaud Mortier) Abelian quandles and quandles with abelian structure group, *J. Pure Appl. Algebra* 225 (2021), no. 1, 106474, 22 pp.
8. Plactic Monoids: a Braided Approach, *J. Algebra* 564 (2020), 325–352.
9. (With Leandro Vendramin) On structure groups of set-theoretic solutions to the Yang–Baxter equation. *Proc. Edinb. Math. Soc.* (2) 62 (2019), no. 3, 683–717.
10. (With J. Scott Carter et S. Yeop Yang) A Prismatic Classifying Space for Foam Homology. *Nonassociative mathematics and its applications*, Contemp. Math., 721 (2019).
11. Applications of Self-Distributivity to Yang–Baxter Operators and Their Cohomology, *J. Knot Theory Ramifications* 27 (2018), no. 11, 1843012, 20 pp.
12. (With Leandro Vendramin) Homology of Left Non-Degenerate Set-Theoretic Solutions to the Yang–Baxter Equation. *Advances Math.* 304 (2017), 1219–1261.
13. Braided Systems: a Unified Treatment of Algebraic Structures with Several Operations. *Homology, Homotopy Appl.* 19 (2017), no. 2, 141–174.
14. (With Friedrich Wagemann) Representations of Crossed Modules and Other Generalized Yetter–Drinfel’d Modules. *Appl. Categ. Structures* 25 (2017), no. 4, 455–488.
15. Cohomology of Idempotent Braidings, with Applications to Factorizable Monoids. *Int. J. Algebra Comput.* 421 (2017), no. 27, 421–454.
16. (With Leandro Vendramin) Cohomology and Extensions of Braces. *Pacific J. Math.* 284 (2016), no. 1, 191–212.
17. Cohomology of Finite Monogenic Self-Distributive Structures. *J. Pure Appl. Algebra* 220 (2016), no. 2, 711–734.
18. (With Seiichi Kamada et Kokoro Tanaka) The Shadow Nature of Positive and Twisted Quandle Cocycle Invariants of Knots. *J. Knot Theory Ramifications* 24 (2015), no. 10, 1540001, 15 pp.
19. Quagebras and Knotted 3-Valent Graphs. *Fund. Math.* 230 (2015), no. 2, 167–204.
20. (With Patrick Dehornoy) Two- and Three-Cocycles for Laver Tables. *J. Knot Theory Ramifications* 23 (2014), no. 4, 1450017, 30 pp.
21. R -Matrices, Yetter–Drinfel’d Modules and Braided Systems. *Axioms* 2013, 2(3), 443–476.
22. Knotted 3-Valent Graphs, Branched Braids, and Multiplication–Conjugation Relations in a Group. *Proceedings of Intelligence of Low-Dimensional Topology* 2014, 86–100.
23. Categorical Aspects of Virtuality and Self-Distributivity. *J. Knot Theory Ramifications* 22 (2013), no. 9, 1350045, 32 pp.
24. Homologies of Algebraic Structures via Braidings and Quantum Shuffles. *J. Algebra* 391 (2013), 152–192.
25. (With V. Bernik) Algebraic Points on the Plane. *J. Math. Sciences* 146 (2007), 5680–5685.

Conferences Co-organised

- 2023 *LOOPS'23*, Bedlewo (Poland)
- 2022 *The algebra of the Yang–Baxter equation*, Bedlewo (Poland)
- 2022 *Algebra Days in Caen 2022: from Yang–Baxter to Garside*, Caen (France)
- 2021 *Braids and beyond*, Conference in memory of Patrick Dehornoy, Caen (France)
- 2019 Mini-Workshop *Algebraic Tools for Solving the Yang–Baxter Equation*, Oberwolfach (Germany)
- Journées Normandes en Topologie*, Caen (France)
- 2017 HMI Workshop *Geometry and combinatorics of associativity*, Dublin (Ireland)

Professional Service and Outreach

- Reviewer for MathSciNet, zbMATH and multiple journals
- Co-organiser of several working groups
- Member of the Scientific committee of LMNO
- Head of the Sustainable development committee of LMNO
- 2023 Co-organiser of the first *RMJI à Caen (Rendez-vous des jeunes mathématiciennes et informaticiennes)*, a program for introducing high-school girls to research and industry jobs in maths and computer science)
- 2022 ✓ Mathematical decoration project for LMNO
- ✓ Co-founder of *CUPGE Maths–Info (cycles universitaires préparatoires aux grandes écoles)*, Caen
- 2019 ✓ *Salon de Culture et Jeux Mathématiques* (LMNO stand + public discussion “Recherche mathématique : rêve ton métier !”)
- ✓ *Ecolyscience* (Science for school)
- ✓ Internship for high school students (workshop “Origami and Maths”)
- ✓ Science Festival (*Fête de la Science*), Caen
- 2017 ✓ Organiser of the Science Week event *Mathematics: the Queen of the Sciences, or students’ nightmare?* (a screening of *How I came to hate Math* by Olivier Peyon, followed by a public discussion on doing and teaching Maths)
- ✓ TCD team selection for Maths Intervarsities, the Irish maths Olympiad for university students
- ✓ Representative of the School of Mathematics at the TCD Open Days (talks aimed at future students)
- 2016 A *5 minutes Lebesgue* video (a part of a short video series promoting maths)
- 2015-16 ✓ Mathematics Club of the University of Nantes: co-organizer and recurrent speaker
- ✓ Collaboration with CH.A.T.S. (mathematically inspired theatre projects for high school students), Nantes
- 2015 Science Festival (*Fête de la Science*), Nantes
- 2014 Science Dialogue program, Japan: talks for high school students
- 2013 Mathematical Culture and Games Salon, Paris
- 2011-13 PhD student representative at the Scientific Council of the Mathematics Department, Paris 7 University
- 2010 International Tournament of Young Mathematicians: Organizing Committee and Jury member

Talks

Conferences

- 2023 Mini-workshop *Skew Braces and the Yang–Baxter Equation*, Oberwolfach (Germany)
Fourth meeting of AlMaRe, Caen
- 2022 *Braces in Bracelet Bay* (UK, online)
- 2021 *Kyoto Top Global University Workshop*, Kyoto (Japan, online)
- 2019 Mini-workshop *Algebraic Tools for Solving the Yang–Baxter Equation*, Oberwolfach (Germany)
Rencontre du GdR de Topologie Algébrique, Arras (France)
Journées Normandes en Topologie, Caen (France)
La journée des fédérations, Le Havre (France)
Loops in Leeds, Leeds (UK)
Groups, Rings and Associated Structures, Spa (Belgium)
Knots and Braids in Norway, Trondheim (Norway)
- 2017 *Categories in Homotopy and Rewriting*, CIRM (France)
Mini-course for the *4th Mile High Conference on Nonassociative Maths*, Denver (USA)
Groups, Rings and the Yang–Baxter Equation, Spa (Belgium)
Self-distributive system and quandle (co)homology theory in algebra and low dimensional topology, Busan (South Korea)
Algebra days 2017 in honour of Patrick Dehornoy, Caen (France)
Cohomological Methods in Geometry, Freiburg (Germany)
- 2016 *La réunion annuelle du GDR topologie algébrique et applications*, Amiens (France)
XXI Coloquio Latinoamericano de Álgebra, Buenos Aires (Argentina)
3+1 dimensional topological phases of matter, Leeds (UK)
Workshop on Hopf algebras, Turin (Italy)
- 2015 *Algebra and Group Theory*, Mulhouse (France)
Workshop Applied Representation Theory, Amiens (France)
Lens topology and geometry meeting, Lens (France)
New trends in Hopf algebras and tensor categories, Brussels (Belgium)
Knots in Dallas, Dallas (USA)
- 2014 *Symposium on Mathematical Physics*, University of Zürich (Switzerland)
Knots and Low Dimensional Manifolds (satellite conference of Seoul ICM), Busan (South Korea)
Topology Symposium, Tohoku University (Japan)
TAPU-KOOK Seminar, Daejeon (South Korea)
Intelligence of Low-dimensional Topology, Kyoto (Japan)
Knots in Washington XXXVII, Washington DC (USA)
Joint Mathematics Meetings AMS, Baltimore (USA)
- 2013 *Knots, Manifolds and Group Actions*, Ślubice (Poland)
British Mathematical Colloquium, Sheffield (UK)
Colloque tournant, GDR TLAG, Cergy-Pontoise (France)
- 2012 *Knots in Washington XXXV*, Washington DC (USA)
Young mathematicians' forum, IHP, Paris (France)
- 2009 *Conference Mathematics*, Minsk (Belarus)
- 2008 *Algebraic Geometry and Representation Theory*, Minsk (Belarus)

Seminars

- 2023 *Le Séminaire Virtuel Francophone Groupes et Géométrie* (online)
- 2022 *Knot and representation theory*, Moscow (Russia, online)
Algebra Seminar of IMJ-PRG, Paris (France, online)
Greater Washington Topology Seminar, Washington (USA, online)
Uppsala Algebra Seminar, Uppsala (Sweden, online)
- 2020 *Online seminar on knot theory*
- 2019 *AGATA*, Montpellier (France)
Séminaire Philippe Flajolet, IHP (France)
- 2018 *Algebra and Geometry Seminar*, Caen (France)
Geometry and Topology seminar, Glasgow (UK)
- 2017 *Algebra seminar*, Lyon (France)
Algebra and Number Theory Seminar, University College Dublin (Ireland)
Mathematics Colloquium and Algebra Seminar, CINVESTAV, Mexico city (Mexico)
Algebra Seminar, Marburg (Germany)
- 2016 *Semantics seminar*, Paris (France)
Geometry Seminar, Trinity College Dublin (Ireland)
Mathematics, Statistics and Applied Mathematics Seminar, Galway (Ireland)
Algebra Seminar, Buenos Aires (Argentina)
Mathematical physics and algebraic topology seminar, Angers (France)
Topology seminar, Grenoble (France)
- 2015 *Mathematics seminar*, Vannes (France)
Algebra and geometry seminar, Caen (France)
Geometry and Algebra, Geometry and Analysis, Utrecht (Netherlands)
Algebraic topology seminar, Louvain (Belgium)
Joint topology seminar of Paris 7 and Paris 13 Universities (France)
Algebra and topology seminar, Strasbourg (France)
- 2014 *Topology seminar*, Montpellier (France)
Algebra and geometry seminar, Caen (France)
Topology and geometry seminar, Geneva (Switzerland)
Topology, geometry and algebra seminar, Nantes (France)
FMSP Lectures, University of Tokyo (Japan)
Friday seminar on knot theory, Osaka City University (Japan)
Topology seminar, Tsukuba University (Japan)
Logic and topology seminar, GWU, Washington DC (USA)
- 2013 *KOOK Seminar*, Osaka (Japan)
Topology seminar, Grenoble (France)
Algebra and topology seminar, Strasbourg (France)
Topology seminar, Montpellier (France)
Algebra, topology and geometry seminar, Nice (France)
Algebraic topology seminar, Paris 13 University (France)
- 2012 *Algebra seminar*, Lyon (France)
Topology seminar, GWU, Washington DC (USA)
Algebra seminar, IHP, Paris (France)
PhD students' day, IMJ, Paris (France)
- 2011 *PhD student seminar*, IMJ

Broad Audience Talks

- 2017 Geometry and Topology, or How different a mug and a donut really are, *Open Days*, TCD Mathematics of Origami, *MathSoc colloquium*, Trinity College Dublin
- 2016 Erdős distinct distances problem, or Vote for diversity! *Mathematics Club*, Nantes
Billiards as a device for computing the digits of π , *Mathematics Club*, Nantes
- 2015 Origamics, *Mathematics Club*, Nantes
- 2012 Billiards: a set of balls rounding down the number π , *Informal PhD student seminar*, IMJ
- 2011 Topological complexity of algorithms, *Informal PhD student seminar*, IMJ
- 2010 Who is who in the family of Homologies, *Informal PhD student seminar*, IMJ

Teaching and Advising Experience

- 2018- Teaching at University of Caen – Normandie:
 - ✓ *Analysis*: 1st year students in Maths and Applied Maths
 - ✓ *Logic*: 1st year students in Computer Science
 - ✓ *Maths: Complements*: 1st year students of CUPGE (preparatory classes for engineering schools)
 - ✓ *Linear Algebra*: 1st and 2nd year students in Maths and Applied Maths
 - ✓ *Formal Calculus*: geometry classes using GeoGebra, 3d year students in Maths
 - ✓ *Maths for future school teachers*: 3d year
 - ✓ *Seminar*: research projects for 3d year students in Maths
 - ✓ *Preparation for Agrégation* (exam for high school teachers): 4th and 5th year students in Maths
- 2020- Advisor for Master Thesis:
 - ✓ Jonah Frebault, *Rack Homology*
 - ✓ Adrien Clément, *Quandle cohomology vs. group cohomology*
- 2016-18 Teaching at Trinity College Dublin (TCD): complete course management
 - ✓ *Group Representations*: 40 third and fourth year students in Maths and Theoretical Physics
 - ✓ *Mathematics for Scientists*: 300 first year students from all scientific disciplines
- 2016-18 Advisor for 4th year projects and summer internship at TCD:
 - ✓ Fintan Murphy, *Knotted Graphs and Branched Braids*
 - ✓ Oisín Hamilton, *Automatic Drawing of Simplified Transport Maps*
 - ✓ Kieran McGimsey, *Links and Braids up to Forbidden Moves*
 - ✓ Conor Feeney and Daniel Matthews, *Tying the Knot with Invariants*
- 2009-13 Teaching at Paris 7 University:
 - ✓ *Elementary Algebra and Analysis*: preparatory course for engineering schools, teaching assistance and weekly oral examinations (*colles*), first year students
 - ✓ *Optimization*, teaching assistance: problem sessions and programming sessions, third year students
 - ✓ *Pre-professional Projects*: group projects on mathematics used by different professions
- 2009-10 Orsay Mathematical Olympiad Club: training for middle and high school students
- 2003-06 National Mathematical Olympiads of Belarus: training for middle and high school students, Jury member

Computer Skills

MatLab, SciLab, Mathematica; C++; L^AT_EX, HTML

Language Skills

- ✓ Russian, Belarusian: native languages
- ✓ English: fluent (TOEIC 05/2012, score 985/990)
- ✓ French: fluent
- ✓ German: intermediate
- ✓ Japanese: beginner