

Curriculum Vitæ

Personal Data

Name: Victoria LEBED
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Contact Information

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Education and Professional Experience

- 2016- Research Fellow at **Trinity College Dublin** (TCD), School of Mathematics (Ireland), funding: **Hamilton Fellowship**, mentor: Vladimir Dotsenko
- 2014-16 Postdoc at **University of Nantes**, Laboratoire de Mathématiques Jean Leray (France), funding: **Fellowship of the Lebesgue Center of Mathematics**, mentor: Friedrich Wagemann
- 2013-14 Postdoc at **Osaka City University Advanced Mathematical Institute** (Japan), funding: **JSPS Fellowship**, mentor: Seiichi Kamada
- 2012-13 Teaching and Research Fellow (*Attaché Temporaire d'Enseignement et de Recherche*) 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, distinction: *très honorable* (the highest)
- 2009 **ENS Diploma**
- 2006-09 **B.Sc.** and **M.Sc.** in Mathematics, **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 and Awards

- 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 and Preprints

Publications

1. (With Leandro Vendramin) On Structure Groups of Set-Theoretic Solutions to the Yang–Baxter Equation. To appear in *Proc. Edinb. Math. Soc.*, 2018.
2. (With J. Scott Carter and S. Yeop Yang) A Prismatic Classifying Space. To appear in *Proceedings of the Mile High Conference (Denver 2017)*, Contemp. Math. 2018.
3. Applications of Self-Distributivity to Yang–Baxter Operators and Their Cohomology. To appear in *J. Knot Theory Ramifications*, 2018.
4. (With Leandro Vendramin) Homology of Left Non-Degenerate Set-Theoretic Solutions to the Yang–Baxter Equation. *Advances Math.* 304 (2017), 1219–1261.
5. Braided Systems: a Unified Treatment of Algebraic Structures with Several Operations. *Homology, Homotopy Appl.* 19 (2017), no. 2, 141–174.
6. (With Friedrich Wagemann) Representations of Crossed Modules and Other Generalized Yetter–Drinfel’d Modules. *Appl. Categ. Structures* 25 (2017), no. 4, 455–488.
7. Cohomology of Idempotent Braidings, with Applications to Factorizable Monoids. *Int. J. Algebra Comput.* 421 (2017), no. 27, 421–454.
8. (With Leandro Vendramin) Cohomology and Extensions of Braces. *Pacific J. Math.* 284 (2016), no. 1, 191–212.
9. Cohomology of Finite Monogenic Self-Distributive Structures. *J. Pure Appl. Algebra* 220 (2016), no. 2, 711–734.
10. (With Seiichi Kamada and 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.
11. Quagebras and Knotted 3-Valent Graphs. *Fund. Math.* 230 (2015), no. 2, 167–204.
12. (With Patrick Dehornoy) Two- and Three-Cocycles for Laver Tables. *J. Knot Theory Ramifications* 23 (2014), no. 4, 1450017, 30 pp.
13. R-Matrices, Yetter–Drinfel’d Modules and Braided Systems. *Axioms* 2013, 2(3), 443–476.
14. Categorical Aspects of Virtuality and Self-Distributivity. *J. Knot Theory Ramifications* 22 (2013), no. 9, 1350045, 32 pp.
15. Homologies of Algebraic Structures via Braidings and Quantum Shuffles. *J. Algebra* 391 (2013), 152–192.
16. (With V.I. Bernik) Algebraic Points on the Plane. *J. Math. Sciences* 146 (2007), 5680–5685.

Proceedings

1. Knotted 3-Valent Graphs, Branched Braids, and Multiplication–Conjugation Relations in a Group, *Proceedings of Intelligence of Low-Dimensional Topology* 2014, 86–100 (link).

Preprints

1. (With Simon Covez, Marco Farinati and Dominique Manchon) Bialgebraic Approach to the Cohomology of Racks and Set-Theoretic Solutions to the YBE. *In progress*.
2. Plactic Monoids: a Braided Approach, arXiv:1612.05768.

Teaching Experience

- 2016- 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- Advisor for 4th year projects and summer internship at TCD:
 - ✓ Fintan Murphy, *Knotted Graphs and Branched Braids*
 - ✓ Oisin 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

Professional Service and Outreach

- Reviewer for MathSciNet and multiple journals
- Co-organiser of several working groups
- 2017 HMI Workshop Geometry and combinatorics of associativity: co-organiser
- 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)
- 2017 TCD team selection for Maths Intervarsities, the Irish maths Olympiad for university students
- 2017 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
- 2015-16 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

- 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

- 2018 *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

Computer Skills

MatLab, SciLab, Mathematica; C++; \LaTeX , HTML

Language Skills

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