

Nicolas Libedinsky

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Citizenship: Chile

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Employment/Education

- 2021-present Full professor, University of Chile.
- 2018-2021 Associate professor, University of Chile.
- 2012-2018 Assistant professor, University of Chile.
- 2010-2012 Von Humboldt postdoctoral fellow, Freiburg University.
- 2009-2010 Postdoctoral fellow, University Paris 7.
- 2008-2009 Postdoctoral fellow, University Paris 12.
- 2008 Ph.D. in Mathematics, University Paris 7. Advisor: Raphael Rouquier.
- 2003-2006 Magistère in Mathematics, École Normale Supérieure, Paris.
- 2000-2002 B.A. in Mathematics, University of Chile.

As visitor

- 2019-2020 November-February International visitor program in Sydney Mathematical Research Institute.
- 2019 August-September visit to University of California, Los Angeles (R. Rouquier).
- 2018 February-March visit to Oregon University (B. Elias).
- 2017 June-August Visit to Sydney University (G. Williamson).
- 2011-2016 Eight visits to Max Planck Institut, Bonn (G. Williamson).
- 2015 Simons visiting professor, Oberwolfach Workshop and Max Planck Institut, Bonn.
- 2006-2009 Nine visits to Oxford University (R. Rouquier and G. Williamson).
- 2005-2006 Three visits to Leeds University, England (R. Rouquier).

Fields of Interest

(Higher, modular) Representation theory, diagrammatic category theory. Recently, relations between representation theory and the following: Bridgeland stability conditions, link homology, algebraic combinatorics, and convex geometry.

Papers and preprints

1. *On reduced expressions for core double cosets* (joint with B. Elias, H. Ko and L. Patimo), arXiv preprint.
2. *Singular Light Leaves* (joint with B. Elias, H. Ko and L. Patimo), arXiv preprint.
3. *On the size of Bruhat intervals* (joint with F. Castillo, D. de la Fuente and D. Plaza), arXiv preprint.
4. *Subexpressions and the Bruhat order for double cosets* (joint with B. Elias, H. Ko and L. Patimo), arXiv preprint.
5. *Demazure operators for double cosets* (joint with B. Elias, H. Ko and L. Patimo), arXiv preprint.
6. *On the affine Hecke category* (joint with L. Patimo), **Selecta Math.** 29 (2023), no. 4, Paper No. 64.
7. *Combinatorial invariance conjecture for \tilde{A}_2* (joint with G. Burrull and D. Plaza), **IMRN** 10 (2023) 8903–8933.
8. *Introsurvey of representation theory*, **Journal of the Indian Institute of Science** 102 (2022) 907–946.
9. *Pre-canonical bases on affine Hecke algebras* (joint with L. Patimo and D. Plaza), **Adv. Math.** 399 (2022).
10. *The Anti-Spherical category* (joint with G. Williamson), **Adv. Math.** 405 (2022).
11. *Kazhdan-Lusztig polynomials and subexpressions* (joint with G. Williamson) **J. Algebra** 568 (2021) 181–192.
12. *Blob algebra approach to modular representation theory* (joint with D. Plaza), **Proc. Lond. Math. Soc.** 121 (2020) 656–701.
13. *p -Jones-Wenzl idempotent* (joint with G. Burrull and P. Sentinelli) **Adv. Math.** 352 (2019) 246–264.
14. *Gentle Introduction to Soergel bimodules I*, **Sao Paulo J. of Math. Sci.** 13 (2019) 499–538.
15. *A non-perverse Soergel bimodule in type A* (joint with G. Williamson), **Comptes Rendus Mathématique** 355 (2017) 853–858.
16. *Indecomposable Soergel bimodules for Universal Coxeter groups* (joint with B. Elias, with an appendix by Ben Webster), **Trans. Amer. Math. Soc.** 369 (2017) 3883–3910.
17. *Light leaves and Lusztig’s conjecture* **Adv. Math.** 280 (2015) 772–807.
18. *Standard objects in 2-braid groups* (joint with G. Williamson) **Proc. Lond. Math. Soc.** 109 (2014) 1264–1280.
19. *New bases of some Hecke algebras via Soergel bimodules* **Adv. Math.** 228 (2011) 1043–1067.
20. *Presentation of right angled Soergel categories by generators and relations* **J. Pure Appl. Algebra** 214 (2010) 2265–2278.
21. *Équivalences entre conjectures de Soergel* **J. Algebra** 320 (2008) 2695–2705.
22. *Sur la catégorie des bimodules de Soergel* **J. Algebra** 320 (2008) 2675–2694.

Selected administrative tasks

Since 2022. Evaluation commission of the Faculty of Sciences (in charge of deciding promotions to Assistant, Associate, and Full Professors).

2020-2022. Head of the Mathematics Department.

2019-2020. Auto evaluation commission of the Faculty of Sciences (in charge of deciding long-term policies for the Faculty).

2015-2017. Directory Board of the Chilean Mathematical Society.

Selected outreach

More than 20 interviews in some mainstream media (El Mercurio, CNN Chile, radio BíoBío, radio Duna, radio La Clave, radio Pauta, radio Oasis, radio Universidad de Chile, TVN, Vía X, etc.)

Publication of the mathematical novel *La unidad de todas las cosas* by the publishing house Planeta in November 2019. Second edition in March 2020. Third edition (by publishing house Simplemente editores) September 2023. The translation of this novel to English will appear soon in Mosaic Press, a Canadian publishing house.

Organizer of the conference and several related activities celebrating the 50th Anniversary of the Faculty of Sciences, University of Chile, December 2015, featuring ten Nobel Prize and Fields Medal winners as speakers. Some 10.000 people attended this set of events.

Organizer of *Conversatorio de Juan*, a conversation about creativity between Anita Tijoux (nominated to several Grammy Awards), Gerard 'tHooft (winner of the Nobel prize in physics) and Humberto Maturana (winner of the National prize of Sciences), moderated by Soledad Onetto (journalist). Some 2.000 people attended the event.

Postdocs and graduate students

Elizabeth Manosalva Postdoc (2023-present)

Juan Camilo Arias Postdoc (2020-2021)

Karina Batistelli Postdoc (2019-2022)

Paolo Sentinelli Postdoc (2015-2018)

David Plaza Postdoc (2013-2016)

Damian De La Fuente Ph.D. (2023-present), joint supervision with Daniel Juteau.

Rodrigo Villegas Ph.D. (2019-present)

Gaston Burrull Ph.D. (2018-2023), joint supervision with Geordie Williamson.

Gonzalo Jimenez Ph. D. (2017-2023)

Damian De La Fuente MS (2020-2022)

Sebastian Cea MS (2016-2017)

Gaston Burrull MS (2016-2018)

Scientific committee

July 2020 (Montevideo, Uruguay) Jury of the UMALCA prize award recipients

July 2020 (Montevideo, Uruguay) *VI Latinamerican congress of Mathematicians*.

August 2019 (Mexico city, Mexico) *XXIII Latinamerican Colloquium of Algebra*.

July 2017 (Montreal, Canada) *Mathematical Congress of the Americas*. Session "Symmetry in Algebra, Topology, and Physics".

March 2016 (Cordoba, Argentina) *Humboldt Kolleg Colloquium on Algebras and Representations - Quantum 2016*.

Selected talks as invited speaker

August 2023 (Bath, England) London Mathematical Society Bath symposium on Geometric and Categorical Representation theory.

August 2023 (CALTECH, Pasadena, California) Algebra, geometry, and combinatorics of link homology.

March 2023 (Puerto Madryn, Argentina) Course in CIMPA school.

September 2022 (Oberwolfach, Germany) Character Theory and Categorification.

February 2020 (Queensland, Australia) New Connections in Representation Theory.

January 2020 (Marseille, France) Short course in IHP Winter School: Categorifications, Moduli Spaces and Representation Theory.

December 2018 (Cordoba, Argentina) Plenary talk in Quantum 60.

July 2018 (Stockholm, Sweden): Categorification and higher representation theory.

December 2016 (Valparaiso, Chile): Sub-plenary talk in the joint meeting between the Chilean Mathematical Society and the Argentinian Mathematical Union.

July 2017, (Quebec, Canada): Plenary talk in Representation Theory Day in Quebec City.

July 2017, (Montreal, Canada): Mathematical Congress of the Americas.

July 2016 (Buenos Aires, Argentina): Latinamerican algebra colloquium.

January 2015 (Pisa, Italy): Perspectives in Lie theory.

December 2014 (Lima, Peru): Mini-course in XX Latinamerican colloquium of algebra.

July 2014 (Lyon, France): Algebraic groups and representations.

January 2014 (Punta Arenas, Chile): Representation theory days in Patagonia.

November 2013 (Melbourne, Australia): Representation Theory in Geometry, Topology and Combinatorics.

September 2013 (Itacoatiara, Brazil): Plenary talk in Jornadas de Algebra em Amasonas.

December 2012 (Pucon, Chile): XIX Latinamerican colloquium of algebra.

December 2012 (Buenos Aires, Argentina): Mini-course in XXII Rioplatense congress of Algebra and Geometry.

August 2012 (Cordoba, Argentina): Latinamerican congress of mathematicians.

July 2010 (Oporto, Portugal): XIX Oporto Meeting on Geometry, Topology and Physics.

February 2009 (Paris, France): Colloque tournant, Groups geometry and representations.

November 2008 (Besancon, France): Annual algebra seminar of Besancon-Dijon.

Projects

Fondecyt regular 1230247, 2023-2027.

Fondecyt regular 1200061, 2019-2023.

Fondecyt regular 1160152, 2015-2019.

Fondecyt iniciación 11121118, 2012-2015.

Anillo 10839, Associate researcher, 2015-2018.

Uredes (University of Chile multidisciplinary project) Director, 2013-2015.

Organization of international conferences

Coorganizer of the conference "SUMA", Valparaíso, December 2016. Joint meeting between the Chilean Mathematical Society and the Argentinian Mathematical Union. Over 300 mathematicians attended.

Organizer of the conference " $q^{\frac{1}{2}}$ ", University of Chile, December 2016. Two-day satellite conference of SUMA.

Coorganizer of the conference "First international congress in experimental approximations to social interaction", January 2015, Valparaíso, Chile. Multidisciplinary conference.

Coorganizer of the conference "Orderable groups", September 2014, Cajón del Maipo, Chile. Over fifty mathematicians attended.

Professional activities

Trainer of the Chilean team for the International Mathematical Olympiads, 2000-2002.