

Leonardo Patimo

Curriculum Vitae

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Employment

- June 2018 - **Wissenschaftliche Mitarbeiter**, *University of Freiburg*, Freiburg im Breisgau (Germany).
Research Assistant of Prof. Wolfgang Soergel
- October 2020 - July 2021 **Internal Junior Fellow**, *Freiburg Institute for Advanced Studies (FRIAS)*, Freiburg im Breisgau (Germany).
10 months research fellowship for outstanding young researcher at University of Freiburg
- Jan-May 2018 **Postdoctoral Fellow**, *Mathematical Sciences Research Institute*, Berkeley (USA).
Semester Program on: Group Representation Theory and Applications

Education

- 2014-2018 **Ph.D. in Mathematics**, *Max Planck Institute for Mathematics*, Bonn (Germany).
Thesis title: *Hodge theoretic aspects of Soergel bimodules and representation theory* (Supervisor: Dr. G. Williamson)
- 2012-2014 **Master's Degree in Mathematics**, *University of Pisa*, Pisa (Italy), 110/110 cum laude.
Thesis Title: *The Erweiterungssatz for the Intersection Cohomology of Schubert Varieties* (Supervisor: Prof. L. Migliorini)
- 2009-2014 **Diploma di Licenza**, *Scuola Normale Superiore*, Pisa, 70/70.
5-year complementary Bachelor's and Master's program in mathematics
- 2009-2012 **Bachelor's Degree in Mathematics**, *University of Pisa*, Pisa, 110/110 cum laude.
Thesis Title: *Quantum Groups and Quivers* (Supervisor: Prof. G. Gaiffi)
- 2004-2009 **Diploma**, *ITIS "G.Ferraris"*, Molfetta (Italy), 100/100.

Publications

- 2018 **The Hard Lefschetz Theorem in positive characteristic for the Flag Varieties**, *Int. Math. Res. Not. IMRN 2018*, no. 18, arXiv:1608.04202.
- 2018 **The Néron-Severi Lie Algebra of a Soergel Module**, *Transform. Groups 23 (2018)*, no. 4, arXiv:1607.05565.
- 2021 **A combinatorial formula for the coefficient of q in Kazhdan-Lusztig polynomials**, *Int. Math. Res. Not. IMRN 2021*, no. 5, arxiv:1811.08184.

Ph.D. Thesis

2018 **Hodge theoretic aspects of Soergel bimodules and representation theory**, *Rheinischen Friedrich-Wilhelms-Universität Bonn*, Available at <http://hdl.handle.net/20.500.11811/7487>.

Preprints

Singular Rouquier Complexes, *Submitted*, arXiv:1908.10966.

Bases of the Intersection Cohomology of Grassmannian Schubert Varieties, *Submitted*, arXiv:1908.11606.

On the induction of p -cells, *Submitted*, arXiv:1911.08969, joint with L.T. Jensen.

On the affine Hecke category, *Submitted*, arXiv:2005.02647, joint with N. Libedinsky.

Pre-canonical bases on affine Hecke algebras, *Submitted*, arXiv:2103.06903, joint with N. Libedinsky and D. Plaza.

Charges via the Affine Grassmannian, *Preprint*, arXiv:2106.06903.

Long Research Visits

February '20 **Sydney Mathematical Research Institute**, *Sydney, Australia*, 3 Weeks.

October '19 **Universidad de Chile**, *Santiago, Chile*, 3 Weeks.

Fall '16 **Research Institute for Mathematical Sciences**, *Kyoto, Japan*, 2 Months.

Spring '17 **University of Sydney**, *Sydney, Australia*, 3 Months.

Selected Invited Talks

July '21 **Oberseminar Darstellungstheorie**, *University of Bonn*, Charges via Affine Grassmannian.

October '20 **Pure Maths Seminar**, *University of East Anglia, Norwich (UK)*, Bases of intersection cohomology of Schubert varieties and Kazhdan-Lusztig polynomials.

July '20 **RepNet Virtual Seminar**, Extending Schubert calculus to intersection cohomology.

April '20 **ARTS - Algebra and Representation Theory Seminar**, *University of Rome "Tor Vergata"*, The quest for bases of the intersection cohomology of Schubert varieties.

February '20 **Algebra Seminar**, *University of Sydney*, p -hybrid bases of the Hecke algebra.

February '20 **Conference: New Connections in Representation Theory**, *Mooloolaba (Australia)*, The quest for bases of the intersection cohomology of Schubert varieties.

June '19 **Seminar: Groupes, Représentations et Géométrie**, *University Paris Diderot, France*, Dyck partitions and the intersection cohomology of Schubert varieties.

May '19 **Forms, Flags, Graphs, and Beyond**, *University of Ottawa, Canada*, Dyck partitions and the intersection cohomology of Schubert varieties.

April '19 **Algebra Seminar**, *University of Florence, Italy*, Moment graph and the combinatorics of Kazhdan-Lusztig polynomials.

November '18 **Workshop: Enveloping Algebras and Geometric Representation Theory**, *Oberwolfach (Germany)*, Minimal reflections and the coefficient of q in Kazhdan-Lusztig polynomials.

- September '18 **Conference: Theorie Geometrique des Representations**, Besse, France, Moment graphs, Kazhdan-Lusztig polynomials and combinatorics.
- May '18 **Algebra Seminar**, University of Oregon, Eugene, USA, Moment graphs, Kazhdan-Lusztig polynomials and combinatorics.
- April '18 **Group and Representation Theory Seminar**, MSRI, Berkeley, USA, Moment graphs, Kazhdan-Lusztig polynomials and combinatorics.
- July '17 **Oberseminar: Algebra, Zahlentheorie und algebraische Geometrie**, University of Freiburg, Germany, Some consequences from Hodge theory in representation theory.
- May '17 **Quinto Incontro Combinatoria Sistemi di Radici (Fifth Meeting on Combinatorics of Root Systems)**, Cortona, Italy, Some Applications of Hodge Theory in Representation Theory.
- April '17 **Pure Mathematics Seminar**, University of Queensland, Brisbane, Australia, Hodge Theoretic Properties in Representation Theory.
- October '16 **Representation Theory Seminar**, RIMS Kyoto, Japan, The Hard Lefschetz Theorem in Positive Characteristic for Flag Varieties.
- August '15 **Summer School on Koszul Duality**, University of Bielefeld, Perverse Sheaves on the Flag Varieties.

Teaching

- WS 20/21 **Algebraic Groups**, as Assistant, University of Freiburg.
- SS 2020 **Lie Groups**, as Lecturer, University of Freiburg.
- WS 19/20 **Algebra and Number Theory**, as Assistant, University of Freiburg.
- SS 2019 **Non-Commutative Algebra and Symmetry**, as Assistant, University of Freiburg.
- WS 18/19 **Reflection Groups Seminar**, as Tutor, University of Freiburg.
- WS 18/19 **Linear Algebra I**, as Assistant, University of Freiburg.
- SS 2018 **Sheaf Cohomology II**, as Assistant, University of Freiburg.
- June '17 **Summer School on Soergel Bimodules**, as Teaching Assistant, MSRI, Berkeley, USA.
- WS 15/16 **Representation Theory II**, as Tutor, University of Bonn.

Other Memberships, Awards and Achievements

- 2018- Member of Graduiertenkolleg 1821: Cohomological Methods in Geometry at the University of Freiburg

Languages

- Italian Mother tongue
- English Fluent
- German Advanced