

Andrea Appel

Curriculum Vitae

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Research Interests

Representation Theory, Mathematical Physics

Current Employment

Assistant Professor (tenure track - RTD b), *Università di Parma*, Italy.

Previous Appointments

2017 - 2020 **Postdoctoral Research Fellow**, *University of Edinburgh*, UK.

2014 - 2017 **Assistant Professor**, *University of Southern California*, Los Angeles, USA.

2013 **Postdoctoral Research Fellow**, *Hebrew University of Jerusalem*, Israel.

Education

Ph.D. in Mathematics

2013 **Northeastern University, Boston**, *Monodromy theorems in the affine setting*.

Advisor: Prof. V. Toledano Laredo

M.Sc. in Mathematics

2008 **University of Rome La Sapienza**, *Triangulated categories and perverse sheaves*.

Advisor: Prof. C. De Concini

Preprints

- **Universal k -matrices for quantum Kac–Moody algebras**, with B. Vlaar.
arXiv:2007.09218, 67pp.
- **Monodromy of the Casimir connection of a Kac–Moody algebra**, with V. Toledano Laredo.
arXiv:1512.03041, 48pp.

Publications

- **Continuum Kac–Moody algebras**, with F. Sala and O. Schiffmann.
To appear in *Moscow Mathematical Journal*.
arXiv:1812.08528, 42pp.
- **Quantization of continuum Kac–Moody algebras**, with F. Sala.
Pure and Applied Mathematics Quarterly 16 (2020) no.3, 55pp.
DOI: 10.4310/PAMQ.2020.v16.n3.a5. arXiv:1903.01413.
- **An explicit isomorphisms between quantum and classical \mathfrak{sl}_n** , with S. Gautam.
Transformation Groups 25 (2020) no.4, 36pp.
DOI:10.1007/s00031-019-09543-6. arXiv:1712.03601.
- **Coxeter categories and quantum groups**, with V. Toledano Laredo.
Selecta Mathematica (N.S.) 25 (2019), no.3, 97pp.
DOI:10.1007/s00029-019-0490-y. arXiv:1610.09741. Revised in June 2019.
- **Uniqueness of Coxeter structures on Kac–Moody algebras**, with V. Toledano Laredo.
Advances in Mathematics 347 (2019), 104pp.
DOI:10.1016/j.aim.2019.02.022. arXiv:1508.01945. Revised in August 2018.
- **A 2-categorical extension of Etingof–Kazhdan quantisation**, with V. Toledano Laredo.
Selecta Mathematica (N.S.) 24 (2018), no.4, 89pp.
DOI:10.1007/s00029-017-0381-z. arXiv:1610.09744. Revised in June 2017.

- **A DG-extension of symmetric functions arising from higher representation theory**, with I. Egilmez, M. Hogancamp, A. Lauda.
Journal of Combinatorial Algebra 2 (2018), no.2, 45pp.
DOI:10.4171/JCA/2-2-3. arXiv:1704.00713.

Other

- **Quasi-Coxeter categories and a relative Etingof-Kazhdan functor**, with V. Toledano Laredo.
Superseded by the publications *Sel. Math. N.S.* 2018 and 2019. arXiv:1212.6720, 63pp.

Thesis

- **Monodromy theorems in the affine setting**, *Ph.D. Thesis*.
hdl.handle.net/2047/d20003201

Research Grants

- 2021-2022 **Programma FIL-Quota Incentivante Università di Parma - Bando 2020**, *Reflection Symmetries arising from quantum loop algebras*.
Role: Principal investigator. Scope: Research Funds. Amounts: €8,500.
- 2020 **Programma per giovani ricercatori Rita Levi Montalcini 2018 (D.M. 511 - 24/8/2020)**.
Role: Principal investigator. Scope: Salary and Research Funds. Amounts: €180,481.44 + €43,000.
Status: grant declined due to incompatibility with the current position. Link.
- 2015-2017 **AMS-Simons Travel Grant**, *AMS-Simons Foundation*, \$4,000.
Role: Principal Investigator. Scope: Research Funds.

Other Grants

- 2019-2020 **IAD Action Grant**, *Institute for Academic Development, University of Edinburgh*, £6,500 (\$8,500).
Role: Coordinator. Scope: Academic projects aimed at PhD students and Postdocs.

Fellowships

- 2014, 2017 **Visiting Fellowship**, IHES.
June-July 2014, October 2017
- 2013 **Dissertation Completion Fellowship**, Northeastern University, approx. \$18,000.
01/01/2013–30/04/2013. Scope: Semester salary (4 months, research only).
- 2011 **Ling-Ma Fellowship**, Northeastern University, approx. \$5,000.
01/06/2011–31/07/2011. Scope: Summer Salary (research only).
- 2008 **University Excellence Fellowship**, Northeastern University, \$25,000.
2008–2013. Scope: Additional research funds.

Visiting positions

- 2021 **Mathematisches Forschungsinstitut Oberwolfach**, Germany.
Research in Pairs with S. Gautam and C. Wendlandt - 2 weeks
- 2019 **Aspen Center for Physics**, Colorado, USA.
Summer Program - 3 weeks
- 2017 **IHES**, France.
Research visit - 2 months
- 2014 **Hebrew University**, Jerusalem, Israel.
Research visit - 2 months
- 2014 **IHES**, Paris, France.
Research visit - 2 months
- 2012 **Columbia University**, NY, USA.
Research visit - 4 months
- 2012 **Forschungsinstitut für Mathematik, ETH**, Zurich, Switzerland.
Research program - 1 month - Link

Further qualifications

Qualification for *Maitre de Conference*, France.

Qualification n.MCF-2017-25-17225293546D

Academic Activities - Organization of conferences and workshops

- 2021 **Organizer**, *Researchers in Algebra and Geometry*, Pisa, September 30 - October 1, 2021.
<http://people.dm.unipi.it/talpo/conferences/ricercatoriAG2020.html>.
Funded by INdAM, Università di Pisa, Scuola Normale Superiore di Pisa, Politecnico di Milano.
- 2021 **Organizer**, *New Perspective in Derived Geometry and Quantization*, Casa Matemática Oaxaca, Mexico, May 2–7, 2021..
<http://www.birs.ca/events/2021/5-day-workshops/21w5145/participants>.
Cancelled due to Covid Emergency.
- 2019 **Organizer**, *56th ARTIN Meeting (Algebra and Representation Theory in the North)*, University of Edinburgh, Nov. 28-29, 2019.
www.maths.ed.ac.uk/~aappel/artin56.html
- 2019 **Organizer**, *Structure and Symmetry Day*, University of Edinburgh, Sept. 27th, 2019.
<https://www.maths.ed.ac.uk/~aappel/ss2019.html>
- 2016 **Organizer**, *US–Mexico Conference in Representation Theory, Categorification, and Noncommutative algebra*, USC, May 30th–June 3rd, 2016.
<http://www-bcf.usc.edu/~lauda/US-MEX-2016/conference2016.html>
- 2014 **Organizer**, *Workshop on Categorification and Representation Theory*, USC.

Academic Activities - Organization of seminar series

- 2021- **Organizer**, *Online Representation Theory Seminar*.
<https://grt.cs.dm.unipi.it>
- 2020- **Organizer**, *Geometry and Representation Theory @Home*.
<https://grt-home.org>
- 2019-2020 **Organizer**, *Junior Hodge Seminar*.
Bimonthly Conference and Weekly Seminar for postdocs and PhD students of the Hodge Institute.
- 2018-2019 **Organizer**, *EDGE+MAXIMALS Seminars*.
Seminar of the Algebra and Geometry group. Website: hodge.maths.ed.ac.uk/tiki/MAXIMALS
- 2014-2017 **Organizer**, *Categorification and Representation Theory Seminar*, USC.
- 2013 **Organizer**, *Seminar on Vertex operator algebras and Geometric Langlands*, Hebrew University of Jerusalem.
- 2011-2012 **Organizer**, *Graduate Student Seminar*, Department of Mathematics, Northeastern U.

Conference Talks

- [12] **ARTIN 2020**, *Nottingham, UK*.
June 29 - July 1, 2020 - [Link](#)
- [11] **Lie Theory Session, XXI Congress of the Italian Mathematical Union**, *Pavia, Italy*.
September 2019 - [Link](#)
- [10] **Moduli Spaces, Representation Theory and Quantization**, *RIMS, Kyoto University*.
June 2019 - [Link](#)
- [9] **Geometry and Mathematical Physics Workshop**, *Loughborough University*.
March 2019 - [Link](#)
- [8] **Representation theory, gauge theory and integrable systems**, *Kavli IPMU, Tokyo*.
February 2019 - [Link](#)
- [7] **Aspects of Higher Representation Theory**, *Brussels, Belgium*.
January 2019 - [Link](#)
- [6] **Conference on Geometric Representation Theory**, *University of Glasgow*.
July 2017 - [Link](#)

- [5] **US–Mexico Conference in Representation Theory and Noncommutative algebra**, *UNAM, Mexico City*.
January 2015 - [Link](#)
- [4] **Algebraic Geometry and Representation Theory in Rome**, *Università Roma Tre, Italy*.
December 2014
- [3] **Second Joint International Meeting IMU–AMS, Special Session on Mirror Symmetry and Representation Theory**, *Tel Aviv University, Israel*.
June 2014 - [Link](#)
- [2] **Quantum groups, Deformation and Geometry - A Conference in memory of J. Donin**, *Bar-Ilan University, Israel*.
June 2014 - [Link](#)
- [1] **AMS Sectional Meeting**, *University of California Riverside*.
Novembre 2013 - [Link](#)

Seminars

- 2021 Representation Theory Seminar, Ohio State University
QGS: Quantum groups seminar
- 2020 The Anglo-Franco-German RepNet Virtual Seminar
Seminario di Algebra e Geometria, Università di Bologna
Seminario di Algebra, Università di Roma Tor Vergata
Séminaire AGATA, Université de Montpellier
- 2019 Geometry and Mathematical Physics Seminar, University of York
Algebra Seminar, University of East Anglia
Algebra Seminar, Leicester University
- 2018 Mathematics and String Theory Seminar, IPMU, University of Tokyo
Séminaire de Physique Mathématique, UBFC, Dijon
Representation Theory Seminar, Ohio State University
Geometric Representation Theory, YCM, Tsinghua University
Mathematics and String Theory Seminar, IPMU, University of Tokyo
- 2017 Quantum groups, Hopf algebras and monoidal categories, Université Catholique de Louvaine
Algebra Seminar, University of York
Algebra Seminar, University of Newcastle
Séminaire quantique, IRMA – Université de Strasbourg
Groupes, Représentations et Géométrie, Université Paris 7
MAXIMALS, University of Edinburgh
GLEN, University of Glasgow
Geometric Methods in Representation Theory Seminar, University of North Carolina
Mathematical Physics Seminar, Stony Brook University
Representation Theory Seminar, Università di Roma Tor Vergata
- 2016 Representation Theory Seminar, University of Toronto
Mathematical Physics Seminar, Perimeter Institute, Waterloo
MAXIMALS, University of Edinburgh
Representation Theory Seminar, UC Berkeley
Algebra Seminar, UC Davis
Algebra and Geometry Seminar, Sapienza University of Rome
- 2015 Algebra Seminar, Università di Pisa
Algebra Seminar, UC Riverside
- 2013 Talks in Mathematical Physics, ETH, Zurich
- 2011 Incontro Natalizio, Dipartimento di Matematica, Università di Roma *La Sapienza*

Teaching - PhD Level Courses

- 2021 **Topics Course**, *Yangians in geometry and representation theory*, University of Parma.
Joint course with University of Pisa and University of Rome Tor Vergata. <https://grt.cs.dm.unipi.it>
- 2016 **Topics in Topology**, *Infinite-dimensional Lie groups*, University of Southern California.
- 2015 **Topics in Algebra**, *Quantum groups and differential equations*, University of Southern California.

Teaching - Università di Parma

- 2021 **Topics in Algebra (*Algebra Superiore*)**, *An introduction to representation theory*.
Laurea Specialistica (upper level/M.Sc.).
Commutative Algebra (*Algebra Commutativa*).
Laurea Triennale (upper level).
- 2020 **Topics in Algebra (*Algebra Superiore*)**, *An introduction to representation theory*.
Laurea Specialistica (upper level/M.Sc.).
Galois Theory (*Estensioni Algebriche di Campi*).
Laurea Specialistica (upper level/M.Sc.).

Teaching - University of Edinburgh

- 2020 **Topics in Rings and Representation Theory**.
- 2019 **Honors Algebra**, Computer Lab Tutoring, (20h in Lab).

Teaching - University of Southern California

Each course listed below included 42h of frontal teaching.

- 2017 **MATH435**, *Vector Analysis and Introduction to Differential Geometry*.
MATH125, *Calculus I*.
- 2016 **MATH611**, *Topics in Topology: Lie Groups and Lie Theory*.
MATH225, *Linear Algebra and Differential Equations*.
MATH118, *Fundamental Principles of Calculus*, (two sections, 84h).
Course coordinator (5 instructors, 10 TAs, approx. 400 students)
- 2015 **MATH118**, *Fundamental Principles of Calculus*, (two sections, 84h).
Course coordinator (5 instructors, 10 TAs, approx. 400 students)
MATH610, *Topics in Algebra: Quantum Groups and Differential Equations*.
Newly designed course.
MATH435, *Vector Analysis and Introduction to Differential Geometry*.
- 2014 **MATH118**, *Fundamental Principles of Calculus*, (two sections, 84h).
MATH125, *Calculus I*, (two sections, 84h).

Teaching - Northeastern University

Each course listed below included 42h of frontal teaching.

- 2011 **MATH1215**, *Mathematical Thinking*.
- 2009 **MTHU241**, *Calculus I for Science and Engineering*.

Languages

Italian, English, French

Research Profiles

- ORCID [0000-0002-6446-9305](https://orcid.org/0000-0002-6446-9305)
Scopus [57200223562](https://orcid.org/57200223562)
Mendeley [Link](#)
GScholar [Link](#)