

# ANNA PUSKÁS

## CURRICULUM VITAE

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QLD 4072, Australia

## RESEARCH INTERESTS

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Number Theory,  $p$ -adic Whittaker functions, Representation Theory, Algebraic Combinatorics.

## EMPLOYMENT

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2020 January - present: Lecturer (Continuing; ARC DECRA 2020-2022) at the University of Queensland, Brisbane, Australia. (Additionally: affiliate member of Kavli IPMU)  
2018 September - 2020 January: Project Researcher, Kavli Institute for the Physics and Mathematics of the Universe, Kashiwanoha, Japan.  
2017 September - 2018 August: Visiting Assistant Professor, Department of Mathematics and Statistics, University of Massachusetts, Amherst.  
2014 September - 2017 August: Postdoctoral Fellow, Department of Mathematical and Statistical Sciences, University of Alberta. Supervisor: Manish Patnaik

## EDUCATION

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**Columbia University**, New York, New York, 2009-2014  
Doctor of Philosophy in Mathematics, May 2014  
Advisors: Gautam Chinta (CUNY); Dorian Goldfeld (Columbia University)

**Eötvös Loránd University**, Budapest, Hungary, 2004-2009  
Master of Science in Mathematics (with honors), July 2009  
Advisor: Mátyás Domokos

## PUBLICATIONS

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- [MPW18] “Correction factors for Kac-Moody groups and  $t$ -deformed root multiplicities” with Dinakar Muthiah and Ian Whitehead (Mathematische Zeitschrift 296, pages 127-145 (2020) arxiv: 1806.05209)
- [CFLMP19] “Ramanujan graphs in cryptography” with Anamaria Costache, Brooke Feigon, Kristin Lauter and Maike Massierer (Research Directions in Number Theory. Springer, Cham, 2019. 1-40. arxiv: 1806.05709)
- [PP17] “Metaplectic Covers of Kac-Moody Groups and Whittaker Functions” with Manish M. Patnaik (Duke Mathematical Journal 168.4 (2019): 553-653., arXiv: 1703.05265)

- [Pus18] “Crystal Constructions in Number Theory” (Recent Trends in Algebraic Combinatorics. Springer, Cham, 2019. 333-362. arxiv: 1810.06190)
- [LLL<sup>+</sup>16] Appendix to “Whittaker functions and Demazure characters” by Kyu-Hwan Lee, Cristian Lenart and Dongwen Liu; with Dinakar Muthiah (Journal of the Institute of Mathematics of Jussieu (2017): 1-23. arXiv:1602.06451)
- [PP15] “On Iwahori-Whittaker Functions for Metaplectic Groups,” with Manish M. Patnaik (Advances in Mathematics 313 (2017): 875-914., arXiv:1509.01594, formerly titled “On the Casselman-Shalika formula for metaplectic groups”)
- [CGP14] “Metaplectic Demazure operators and Whittaker functions,” with Gautam Chinta and Paul E. Gunnells (Indiana Univ. Math. J. 66 No. 3 (2017), 10451064, arXiv:1408.5394)
- [DP12] “Multisymmetric Polynomials in Dimension Three”, with Mátyás Domokos *Journal of Algebra*, Vol. 356, Issue 1, pages 283-303, 2012

## PREPRINTS

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- [FP17] “Imaginary Multiquadratic Fields of Class Number Dividing  $2^m$ ” with Amy Feaver (2017; arxiv: 1712.06769)
- [Pus16] “Whittaker functions on metaplectic covers of  $GL(r)$ ” (2016; arXiv: 1605.05400)

## GRANTS

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DE200101802 Australian Research Council Discovery Early Career Research Award starting in 2020 (ARC DECRA).

## PROFESSIONAL SERVICE

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Served as referee for *Journal of Number Theory*, *Selecta Mathematica*.

Organizer of *What is...? Seminar* with Valentin Buciumas and Masoud Kamgarpour at the University of Queensland, since Semester 1, 2020.

Organizer of Special Session on *Automorphic Forms, Combinatorics and Representation Theory* with Daniel Bump, Solomon Friedberg and Paul E. Gunnells at the Spring Western Sectional Meeting of the AMS; April 9-10, 2016, Salt Lake City, Utah

Organizer of *Alberta Number Theory Days VIII (16w2687)* with Habiba Kadiri, at the Banff International Research Centre, April 15-17, 2016, Banff, Alberta

Organizer of GIST (General Interest Seminar on Thursdays) at the University of Alberta, with Shashank Kanade, in 2015 fall

Organizer of two learning seminars at the University of Alberta, with Manish M. Patnaik

2015 Fall: Gaussent-Littelman Learning Seminar

2015 Winter: Littelman Paths Learning Seminar

Board member of Arany Dániel Mathematics Competition, 2007-2009

Grader in Competition of Math Problems by KöMaL Journal of Mathematics and Physics for Secondary Schools

## TEACHING EXPERIENCE

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### INSTRUCTOR

**University of Queensland** (lectures, for undergraduates)

Mathematics 2302/7308 (Discrete Mathematics II, 2020 Semester 2 - course coordination and half-semester of lecturing)

**University of Massachusetts, Amherst** (lectures, for undergraduates)

Mathematics 471 (Theory of Numbers, 2018 spring)

Mathematics 233 (Multivariate calculus, 2018 spring)

Mathematics 233H (Honors multivariate calculus, two sections, 2017 fall)

**University of Alberta** (lectures, for undergraduates)

Mathematics 114 (Single variable calculus, 2015 fall)

Mathematics 113/114 (Single variable calculus, 2014 fall)

**Columbia University** (lectures, for undergraduates)

Calculus III (2013 summer)

Calculus II (2012 summer)

Calculus I (2012 spring)

**Columbia University Science Honors Program** (for high-schoolers)

Groups, Symmetries and Games (2011 fall with Corrin Clarkson)

Number Theory (2010 fall, 2011 spring with Ian Whitehead)

**Eötvös Loránd University** (problem-solving, for undergraduates)

Number Theory (2006-2009 fall semesters)

Linear Algebra (2008 fall).

Algebra (2007 spring)

### TEACHING ASSISTANT

## Columbia University

Calculus I (2013 fall), Salim Ali Altuğ

Calculus IV (2013 spring), Paul Siegel

Introduction to Modern Algebra (2012 fall), Robert Friedman

Introduction to Modern Analysis (2011 fall), Patrick Gallagher

Introduction to Modern Analysis (2011 summer), Shahriar Mokhtari

Calculus IV (2011 summer), Qing Lu

Introduction to Modern Algebra (2010 fall, 2011 spring), Michael Thaddeus

## PRESENTATIONS

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*New Connections in Integrable Systems*, October 1, 2020, on Zoom based in Brisbane, Queensland, Australia

*New Connections in Representation Theory*, February 14, 2020, Mooloolaba, Queensland, Australia

University of Hawai'i at Mānoa, January 22, 2020, Honolulu, Hawaii

*Workshop on Kac-Moody Geometry*, May 24, 2019, Besse-et-Saint-Anastaise, France

University of Queensland, January 24, 2019, Brisbane, Queensland, Australia

*SageDays@ICERM: Combinatorics and Representation Theory*, July 23, 2018, Providence, Rhode Island

*Lunch Talk Series* at Smith College, March 8, 2018, Northampton, Massachusetts

*Reresentation Theory Seminar* at University of Massachusetts Amherst, January 29, 2018, Amherst, Massachusetts

*Five College Number Theory Seminar* at University of Massachusetts Amherst, February 13, 2018, Amherst, Massachusetts

*Algebra Seminar*, SUNY Albany, December 7, 2017, Albany, New York

UNC Wilmington, February 29, 2017 Wilmington, North Carolina

*Number Theory Seminar*, University of Minnesota, October 31, 2016, Minneapolis, Minnesota

*Special Session on Representation Theory, Automorphic Forms and Related Topics*, AMS Fall Central Sectional Meeting, October 29-30, 2016, Minneapolis, Minnesota

*Whittaker Functions: Number Theory, Geometry and Physics*, BIRS Workshop (16w5039) July 24-29, 2016, Banff, Alberta

*Special Session on Automorphic Forms, Combinatorics and Representation Theory*, AMS Spring Western Sectional Meeting, April 9-10, 2016, Salt Lake City, Utah

*Algebra Seminar*, Virginia Tech, March 30, 2016, Blacksburg, Virginia

*Alberta Number Theory Days VII*, BIRS Workshop (15w2198) June 12-14, 2015, Banff, Alberta

*Special Session on Algebraic Combinatorics and Representation Theory*, Joint Mathematical Meetings, January 11, 2015, San Antonio, Texas

*Connecting Women in Mathematics Across Canada*, BIRS Workshop (14w2196), October 3 - 15, 2014, Banff, Alberta, Canada

*Whittaker Functions: Number Theory, Geometry and Physics*, BIRS Workshop (13w5154) October 13 - 18, 2013, Banff, Alberta, Canada

*Special Session on Representation Theory, Combinatorics and Categorification*, AMS Fall Eastern Sectional Meeting, October 12 - 13, 2013 Temple University, Philadelphia, Pennsylvania

*Invited Graduate Student Lecture*, Texas-Oklahoma Representations and Automorphic forms V September 20 - 22, 2013, Oklahoma State University, Stillwater, Oklahoma

*Number Theory Seminar*, Alfréd Rényi Institute of Mathematics (Hungarian Academy of Sciences), May 28, 2013, Budapest, Hungary

*New York Women in Mathematics and Computing Workshop, poster session*, May 10, 2013, CUNY Graduate Center, New York, New York

*Graduate Student and Post-Doc Research Seminar*, May 1, 2013, ICERM, Providence, Rhode Island

*Combinatorics, Multiple Dirichlet Series and Analytic Number Theory, poster session*, April 17, 2013, ICERM, Providence, Rhode Island

## AWARDS, FELLOWSHIPS AND COMPETITIONS

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Mathematics Department PhD recognition award for excellence in teaching, Columbia University, 2013-2014.

Carl B. Boyer Memorial Fellowship, Columbia University, 2014.

Scholarship of the Republic (Hungary), 2007/2008, 2008/2009.

Excellent Student Award, Faculty of Natural Sciences, Eötvös Loránd University, 2008.

Schweitzer Memorial Competition, Second Honourable Mention (9th-10th place) 2008.

Schweitzer Memorial Competition, Honourable Mention (5th-6th place) 2006.

## PARTICIPATION IN WORKSHOPS AND RESEARCH PROGRAMS

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*Women in Numbers 4*, Banff International Research Station, August 13 - 18, 2017, Banff, Alberta, Canada

*Whittaker Functions: Number Theory, Geometry and Physics*, Banff International Research Station, July 24 - 29, 2016, Banff, Alberta, Canada

*Combinatorial representation Theory*, in CRM program: New Directions in Lie Theory, April 21 - 25, 2014, Montreal, Quebec, Canada

*Whittaker Functions: Number Theory, Geometry and Physics*, Banff International Research Station, October 13 - 18, 2013, Banff, Alberta, Canada

*Automorphic Forms, Combinatorial Representation Theory and Multiple Dirichlet Series*, ICERM Semester Program, January 28 - May 3, 2013, Providence, Rhode Island

*Homogeneous Spaces and Geometric Representation Theory*, February 27 - March 2 2012, Winter School at Ruhr University Bochum, Germany

*Research in Industrial Projects for Students (RIPS)*, June 24 - August 24 2007, Institute of Pure and Applied Mathematics, Los Angeles, California

## LANGUAGE SKILLS

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Fluent in Hungarian and English (PTE Academic: 90 points, September 2019, TOEFL: 117 points, November 2008). Medium-level French and some German.

## REFERENCES

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Benjamin B. Brubaker, University of Minnesota, [brubaker@umn.edu](mailto:brubaker@umn.edu)

Daniel Bump, Stanford University, [bump@sporadic.stanford.edu](mailto:bump@sporadic.stanford.edu)

Gautam Chinta, The City College of New York (CUNY), [gchinta@ccny.cuny.edu](mailto:gchinta@ccny.cuny.edu)

Cristian Lenart, State University of New York at Albany [clenart@albany.edu](mailto:clenart@albany.edu)

Manish M. Patnaik, University of Alberta, [patnaik@ualberta.ca](mailto:patnaik@ualberta.ca)

Patrick Dragon, University of Massachusetts, Amherst [dragon@math.umass.edu](mailto:dragon@math.umass.edu)  
(teaching reference)