

Alexander Rossi Miller

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Positions Held

- 2017–2020 Member, University of Vienna, Austria
- 2017 Visiting Scientist, Institut Henri Poincaré, Paris, France
- 2014–2017 J. L. Doob Research Assistant Professor, University of Illinois

Education

- 2013 Ph.D. in Mathematics, University of Minnesota

Publications

19. The characters of symmetric groups that depend only on length
Alexander R. Miller
Math. Z., in press
18. Zeros and roots of unity in character tables
Alexander R. Miller
Enseign. Math., in press
17. On Foulkes characters
Alexander R. Miller
Math. Ann. **381** (2021) 1589–1614
16. The sparsity of character tables of high rank groups of Lie type
Michael J. Larsen and Alexander R. Miller
Represent. Theory **25** (2021) 173–192
15. Congruences in character tables of symmetric groups
Alexander R. Miller
Preprint
14. Many zeros of many characters of $GL(n, q)$
Patrick X. Gallagher, Michael J. Larsen, and Alexander R. Miller
Int. Math. Res. Not. IMRN **2022** 4376–4386
13. Dense proportions of zeros in character values
Alexander R. Miller
C. R. Math. Acad. Sci. Paris **357** (2019) 771–772

12. Character restrictions and reflection groups
Eugenio Giannelli and Alexander R. Miller
J. Algebra **531** (2019) 336–348
11. On parity and characters of symmetric groups
Alexander R. Miller
J. Combin. Theory, Ser. A **162** (2019) 231–240
10. Walls in Milnor fiber complexes
Alexander R. Miller
Doc. Math. **23** (2018) 1247–1261
9. Orthogonal polynomials and Smith normal form
Alexander R. Miller and Dennis Stanton
Monatsh. Math. **187** (2018) 125–145
8. Some characters that depend only on length
Alexander R. Miller
Math. Res. Lett. **24** (2017) 879–891
7. Eigenspace arrangements of reflection groups
Alexander R. Miller
Trans. Amer. Math. Soc. **367** (2015) 8543–8578
6. Foulkes characters for complex reflection groups
Alexander R. Miller
Proc. Amer. Math. Soc. **143** (2015) 3281–3293
5. The probability that a character value is zero for the symmetric group
Alexander R. Miller
Math. Z. **277** (2014) 1011–1015
4. Reflection arrangements and ribbon representations
Alexander R. Miller
Ph.D. Thesis, 2013
European J. Combin. **39** (2014) 24–56
3. Differential posets have strict rank growth: a conjecture of Stanley
(Positively answers 25-year-old question of R. P. Stanley from 1988 in JAMS)
Alexander R. Miller
Order **30** (2013) 657–662
2. Note on 1-crossing partitions
M. Bergerson, A. Miller, A. Pliml, V. Reiner, P. Shearer, D. Stanton, N. Switala
Ars Combinatoria **99** (2011) 83–87
1. Differential posets and Smith normal forms
Alexander R. Miller and Victor Reiner
Order **26** (2009) 197–228

Conference Proceedings

2. Vanishing results for character tables
Alexander R. Miller
in “Character Theory and Categorification”,
Oberwolfach Reports **19** (2022), to appear
1. Milnor fiber complexes and some representations
Alexander R. Miller
in “Topology of Arrangements and Representation Stability”, pp. 43–123,
Oberwolfach Reports **15** (2018)

Conferences and Lectures

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| 2022 | Aug | Character Theory and Categorification, Oberwolfach, Germany |
| 2021 | Mar | Combinatorics Seminar, University of Southern California, Los Angeles, USA |
| 2020 | Feb | Bern–Neuchâtel–Fribourg Intercity Seminar, Universität Bern, Switzerland |
| 2019 | Sep | Austrian Mathematical Society Conference, Dornbirn, Austria |
| 2019 | Jan | Combinatoire Énumérative et Analytic, Université Paris Diderot (Paris 7), France |
| 2018 | Nov | Einstein Workshop on Algebraic Combinatorics, Freie Universität Berlin, Germany |
| 2018 | May | Algebra & Representation Theory Seminar, University of Cambridge, UK |
| 2018 | Mar | Séminaire Lotharingien de Combinatoire, Institut Camille Jordan, Lyon, France |
| 2018 | Mar | Arbeitsgemeinschaft für Diskrete Mathematik, Technische Universität Wien, Austria |
| 2018 | Jan | Topology of Arrangements and Representation Stability, Oberwolfach, Germany |
| 2017 | Dec | Algebraic and Enumerative Combinatorics, SFB Statusseminar, Strobl, Austria |
| 2017 | Nov | Algebra und Algebraischen Kombinatorik, Leibniz Universität Hannover, Germany |
| 2017 | Sep | Séminaire Lotharingien de Combinatoire, Bertinoro, Italy |
| 2017 | May | Midwest Combinatorics Conference, University of Minnesota, Twin Cities, USA |
| 2015 | Oct | Enumerative Algebraic & Geometric Combinatorics, AMS Session, Chicago, USA |
| 2013 | Mar | Algebraic Combinatorics, AMS Special Session, Oxford, USA |
| 2012 | Oct | Combinatorics Seminar, University of Minnesota, Twin Cities, USA |
| 2012 | May | Combinatorics Seminar, University of Minnesota, Twin Cities, USA |
| 2010 | Apr | Combinatorial Representation Theory, AMS Special Session, St. Paul, USA |
| 2009 | Jan | Algebraic Combinatorics Seminar, Fields Institute, Toronto, Canada |
| 2008 | Mar | Combinatorics Seminar, University of Minnesota, Twin Cities, USA |

Journals and Conferences Refereed

2010–
Advances in Applied Mathematics
Algebraic Combinatorics
Canadian Mathematical Bulletin
Discrete and Computational Geometry
Discrete Mathematics
Electronic Journal of Combinatorics
Formal Power Series and Algebraic Combinatorics
Journal of Algebraic Combinatorics
Journal of Combinatorial Theory Series A
Journal für die reine und angewandte Mathematik (Crelle's Journal)
Order, a journal on the theory of ordered sets and its applications
Proceedings of the American Mathematical Society
SIAM Journal on Discrete Mathematics

Teaching Experience

Courses taught at the University of Illinois

2016 Fall Calculus III Honors (Math 241)
2016 Fall Nonlinear Programming (Math 484)
2016 Spg Conjugate Duality and Optimization (Math 589)
2016 Spg Nonlinear Programming (Math 484)
2015 Fall Nonlinear Programming (Math 484)
2015 Spg Nonlinear Programming (Math 484)
2014 Fall Fundamental Mathematics (Math 347)

Courses taught at the University of Minnesota

2014 Spg Introduction to Modern Algebra (Math 4281)
2013 Fall Calculus II (Math 1272)
2013 Sum Applied Linear Algebra (Math 4242)
2011 Fall Calculus II (Math 1272)
2011 Sum Applied Linear Algebra (Math 4242)
2009 Sum Calculus I (Math 1271)

Recitations led at the University of Minnesota

2014 Spg CSE Linear Algebra and Differential Equations (Math 2373)
2012 Fall Linear Algebra and Differential Equations (Math 2243)

- 2010 Spg Calculus I (Math 1271)
- 2010 Spg Honors Calculus II (Math 1572H)
- 2009 Fall Honors Calculus I (Math 1571H)
- 2009 Spg Sequences, Series, and Foundations: Writing Intensive (Math 3283W)
- 2008 Fall Sequences, Series, and Foundations: Writing Intensive (Math 3283W)
- 2008 Spg Honors Calculus IV (Math 2574H)
- 2007 Fall Honors Calculus III (Math 2573H)

Teaching Awards

- 2008 Apr *John Bowers Excellence in Teaching Assistance Award*, University of Minnesota.
“...honors an outstanding teaching assistant who has demonstrated exceptional interest and commitment to the teaching of IT [Institute of Technology] students.”
- 2008 Feb *Institute of Technology TA Award*, University of Minnesota.
“...one of three TA’s that was voted best TA in the Institute of Technology. The voting was done completely by students in the Institute of Technology.”