

# Curriculum Vita of George McNinch

## Personal Data

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## Higher Education

- Ph.D. (Mathematics) 1996. [University of Oregon](#) (Eugene, OR). Advisor: [Gary M. Seitz](#)
- B.S. (Mathematics, Physics) 1990. Samford University (Birmingham AL).

## Academic Positions

- 2013–present. Professor [Tufts University](#).
- 2006–2013. Associate Professor, [Tufts University](#).
- 2004–2006. Assistant Professor, [Tufts University](#).
- 1996–2004. Assistant Professor, University of Notre Dame.
- 1990–1996. Graduate Teaching Fellow, [University of Oregon](#), .

## Thesis students

- Ph.D. 2021 (expected) – Nariel Monteiro, Tufts University.
- Ph.D. 2017 – [Seth Rothschild](#), Tufts University.
- AY2016–2017 – Christian Testa (BS), Senior Honors Thesis, Tufts University.
- Ph.D. 2015 – [Alex Babinski](#), Tufts University.
- MS – [Nathan Scheinmann](#), l'École Polytechnique Fédérale de Lausanne (EPFL), Switzerland.
- AY2012–2013 – Samir Chowdhury (BS), Senior Honors Thesis, Tufts University.
- Ph.D. 2011 – [Ellen Goldstein](#), Tufts University.
- Ph.D. 2007 – Art Weiss, Tufts University.
- MS 2008 – Emily Harvey, Tufts University.
- MS 2007 – Erica Waite, Tufts University.
- MS 2007 – David Earls, Tufts University.

## Grants and Awards

- 2011–2013. National Security Agency. Principal investigator: H9230-11-1-0164.
- 2008–2010. National Security Agency. Principal investigator: H98230-08-1-0110.
- 2004–2008. National Science Foundation. Principal investigator: DMS04 37482.

- 1999-2002. National Science Foundation. Principal investigator: DMS99 70301.

## Service for the Tufts Mathematics Department

- AY2019-2020. Undergraduate Director.
- 2014–2019. Associate Department Chair
- AY2019-2020. Hiring Committee, NWAP Algebraic Geometry.
- AY2017-2018. Hiring Committee, NWAP Number Theory.
- AY2016-2017. Hiring Committee, Assistant Professor in Complex Geometry.
- AY2015-2016. Hiring Committee Chair, Full Time Lecturer.
- AY2014-2015. Hiring Committee Chair, Assistant Professor in Number Theory.
- AY2013-2014. Iterim Graduate Director
- AY2013-2014. Hiring Committee, NWAP algebraic geometry.
- AY2012-2013. Hiring Committee, NWAP.
- 2008–2010. Curriculum Committee Chair
- AY2006-2007. Hiring Committee, 3-year Assistant Professor in Algebraic Groups.
- 2004–2017. Graduate Committee

## Service to the Profession

- 2020-03. Co-organizer (with E. Sommers): [Special Session on Algebraic Groups, AMS sectional meeting Tufts University. \*\*cancelled\*\*](#).
- 2020, 2016, 2013. Panelist for the National Science Foundation.
- 2019-04. International member, Ph.D. committee, École Polytechnique Fédérale de Lausanne.
- 2014-11. Co-organizer (with S. Garibaldi): [Special Session on Exceptional Groups in Physics, Algebra, and Geometry](#), AMS sectional meeting, UNC Greensboro.
- 2012-01. Co-organizer (with S. Garibaldi): [Special Session on Linear algebraic groups: their arithmetic, geometry, and representations](#), Joint Mathematics Meeting, AMS Boston MA.
- 2006-09. International expert member, Ph.D. committee, Mathematics Department, [Aarhus Universitet Denmark](#).
- 2006-04. Co-organizer (with E. Sommers): [Special Session on Algebraic Groups](#), AMS sectional meeting, Univ New Hampshire Durham.
- 2000-04. Co-organizer: [Special Session on Representations of Groups and Related Objects](#), AMS sectional meeting, Univ Notre Dame South Bend IN.
- since 1997. Referee and reviewer: [Math Reviews](#), NSF, NSA, various mathematics journals.
- since 1996. Member [American Mathematical Society](#).

## Service to Tufts University

- AY2020-2021 – AS&E Executive Committee.
- AY2013-2014 – AY2018-2019. A&S Committee on Academic Standing and Honors. **Chair:** AY2014-2015 – AY2016-17.
- AY2014-2015 to AY2018-2019. AS&E Budget and Priorities Committee. **Chair:** AY2018-2019.
- AY2015-2016. AS&E Undergraduate Admissions and Financial Aid Committee.
- AY2015-2016. AS&E Residential Strategies Working Groups.
- AY2015-2016. A&S Workload Committee.
- AY2013-2014 and AY2014-2015. AS&E Faculty Research Support and Facilities Committee.
- AY2012-2013. AS&E Committee on Committees.
- AY2011-2012. Faculty Research Awards Committee.

- AY2005-2006 – AY2009-2010. AS&E Undergraduate Admissions and Financial Aid Committee. **Chair:** AY2009-2010

## Workshops, Conferences and Lectures

- 2021-04 – Invited (virtual) participant, [Oberwolfach workshop on Algebraic Groups](#).
- 2020-03 – Invited speaker, Conference on [The combinatorics and geometry of Jordan type and commuting varieties](#), Northeastern University (Boston MA) – *virtual*.
- 2019-03 – Colloquium speaker, [Northern Illinois University math department](#), DeKalb, IL.
- 2018-11 – Invited speaker, [Workshop on Algebraic Groups, Lie Algebras, and their Representations](#), Max Planck Institute for Mathematics, Bonn, Germany.
- 2018-06 – Invited speaker, [Southeastern Lie Theory conference](#), University of Georgia (Athens, GA).
- 2018-05 – Invited speaker, [Algebraic Groups and Geometrization of the Langlands Program](#), Univ Lyon and École Normale Supérieure Lyon (Lyon, France).
- 2018-04 – Invited speaker, [Combinatorial Aspects of Nilpotent Orbits](#), AMS sectional meeting, Northeastern University (Boston, MA).
- 2018-04 – Participant, [workshop on Representations of Finite and Algebraic Groups](#) Mathematical Sciences Research Institute (Berkeley, CA).
- 2017-09 – Invited speaker, [workshop on Pseudo-reductive Groups](#) Newcastle University (Newcastle, UK).
- 2017-09 – Invited speaker, [Algebra seminar](#), University of York (York, UK).
- 2017-09 – Invited speaker, [ARTIN \(Algebra and Representation Theory in the North\)](#), University of Manchester (Manchester, UK). + 2016-10 – Invited speaker, special session on [Combinatorial Aspects of Nilpotent Orbits](#), AMS sectional meeting at Bowdoin College (Brunswick, ME).
- 2016-07 – Visitor, workshop on [Local Representation Theory and Simple Groups](#), Centre Intrafacultaire Bernoulli, l'École Polytechnique Fédérale de Lausanne (EPFL; Lausanne, Switzerland).
- 2016-05 – Invited speaker, workshop on [Branching Problems for Reductive Groups](#), Institut Mittag-Leffler (Djursholm, Sweden).
- 2016-03 – Invited speaker, special session on [Lie Theory, Representation Theory, and Geometry](#), AMS sectional meeting University of Georgia (Athens, GA).
- 2016-02 – Invited speaker, workshop on [Complete Reducibility, Geometric Invariant Theory and Buildings](#), Ruhr-Universität Bochum (Bochum, Germany).
- 2015-10 – Participant, workshop on [Springer Theory and Related Topics](#), University of Massachusetts (Amherst, MA).
- 2015-09 – Participant, workshop on [The Use of Linear Algebraic Groups in Number Theory and Geometry](#), Banff International Research Station for Mathematical Innovation and Discovery (Alberta, Canada).
- 2015-07 – Participant, [Simple groups, representations, and related topics](#), Cambridge University (Cambridge, UK).
- 2015-07 – Participant, workshop on [Finite Simple Groups and Related Topics](#), Warwick University (Warwick, UK).
- 2014-09 – Invited speaker, workshop on [Geometric Methods in Representation Theory](#), University of Lancaster (Lancaster, UK).
- 2013-10 – Invited speaker, [Union College Mathematics Conference](#) special session on Commutative Algebra and Algebraic Geometry, Union College (Schenectady, NY).
- 2013-06 – Invited speaker, [Conference on Cohomology in Lie Theory](#), Oxford University (Oxford, UK).
- 2013-04 – Invited speaker, special session on [Geometric Methods in the Representation Theory of Reductive Groups](#), AMS sectional meeting at the University of Colorado (Boulder, CO).
- 2012-07 – Participant, workshop on [Cohomology and Support in Representation](#)

- [Theory and Related Topics](#), University of Washington (Seattle, WA).
- 2011-05 – Participant [Ramification in Algebra and Geometry](#) Emory University (Atlanta, GA).
  - 2011-01 – Invited speaker, special session on [Lie Algebras, Algebraic Groups, and Related Topics](#), AMS/MAA Joint National Meeting (New Orleans, LA).
  - 2009-09 – Visitor, [Forschungsinstitut für Mathematik](#), ETH (Zurich, Switzerland).
  - 2009-08 – Invited speaker, [Algebraic Groups and Invariant Theory](#), Centro Stefano Franscini (Ascona, Switzerland).
  - 2009-03 – Invited speaker, special session on [Brauer groups, quadratic forms, algebraic groups, and Lie algebras](#), AMS Spring Southeastern Sectional Meeting at the North Carolina State University (Raleigh, NC).
  - 2008-10 – Invited speaker, special session on [Computation in Modular Representation Theory](#), AMS Fall Central Section Meeting at Western Michigan University (Kalamazoo, MI).
  - 2008-06 – Invited speaker, visitor [Institut de Géométrie, Algèbre et Topologie \(IGAT\)](#), l'École Polytechnique Fédérale de Lausanne (EPFL; Lausanne, Switzerland).
  - 2007-05 – Participant [workshop on Algebraic Groups](#) Mathematisches Forschungsinstitut Oberwolfach (Oberwolfach Math Institute, Germany).
  - 2007-05 – Invited speaker, workshop on [Algebraic Lie theory](#), Banff International Research Station for Mathematical Innovation and Discovery (Alberta, Canada)..
  - 2007-01 – Invited speaker, special session on [Cohomology and Representation Theory](#), AMS-MAA Joint Mathematics Meeting (New Orleans, LA).
  - 2005-06 – Invited speaker and visitor workshop at the [Bernoulli Center](#), l'École Polytechnique Fédérale de Lausanne (EPFL; Lausanne, Switzerland).
  - 2005-01 – Invited speaker, special session on [Modular Representation Theory of Finite and Algebraic Groups](#), AMS-MAA Joint Mathematics Meeting (Atlanta, GA).
  - 2004-07 – Invited speaker, [AMS Summer Research Conference on Representations of Algebraic Groups, Quantum Groups, and Lie Algebras](#) (Snowbird, Utah).
  - 2004-03 – Invited speaker, Seitz Birthday Conference on Groups and Representations, University of Oregon (Eugene, OR).
  - 2003-05 – Invited speaker, workshop on *Algebraic Groups, Lie Algebras and their Representations*, University of Birmingham (Birmingham, UK).
  - 2003-03 – Invited speaker, special session on Geometric Representation and Invariant Theory, London Math Society Regional Meeting at University of Manchester (Manchester, UK).
  - 2003-02 – Seminar speaker, *Lie Groups Seminar*, Massachusetts Institute of Technology (Cambridge, MA).
  - 2001-06 – Invited speaker, workshop on *Algebraic Groups*, University of Bielefeld (Bielefeld, Germany).
  - 2001-03 – Participant, workshop on *Algebraic Groups*, Mathematisches Forschungsinstitut Oberwolfach (Oberwolfach Math Institute; Germany).
  - 1999-05 – Invited speaker, special session on *Representation Theory and Geometry*, Canadian Math Society meeting (St. John's, Newfoundland).
  - 1998-07 – Invited speaker, workshop on *Algebraic Representation Theory*, [Aarhus University](#) (Aarhus, Denmark).
  - 1998-05 – Invited speaker, CBMS workshop [Blocks of finite reductive groups, Deligne-Lusztig varieties, and complex reflection groups](#), University of North Texas (Denton, TX)..
  - 1998-03 – Invited speaker, special session on [Representations of Algebraic Groups](#), AMS Sectional Meeting at the Kansas State University (Manhattan, KS>).
  - 1997-06 – Invited speaker, [NATO Advanced Study Institute on Representation Theory of Algebraic Groups and Related Finite Groups](#) at the Isaac Newton Institute for Mathematical Sciences (Cambridge, UK).

## Manuscripts

1. *Nilpotent elements and reductive subgroups over a local field* (2021). *To appear in Algebras and Representation Theory*. [\[gmcninch.math\]](#), [\[DOI\]](#) and [\[URL\]](#).
2. *Reductive subgroup schemes of a parahoric group scheme* (2020). *Transformation Groups* 25 (2020), no. 1, pp. 217–249. [\[gmcninch.math\]](#), [\[MR\]](#), [\[DOI\]](#) and [\[URL\]](#).
3. *Central subalgebras of the centralizer of a nilpotent element* (2016). *Proceedings of the American Mathematical Society* 144 (2016), no. 6, pp. 2383–2397. With [Donna M. Testerman](#) (École Polytechnique Fédérale de Lausanne). [\[gmcninch.math\]](#), [\[MR\]](#) and [\[DOI\]](#).
4. *Linearity for actions on vector groups* (2014). *Journal of Algebra* 397 (2014), pp. 666–688. [\[gmcninch.math\]](#), [\[MR\]](#) and [\[DOI\]](#).
5. *Levi factors of the special fiber of a parahoric group scheme and tame ramification* (2014). *Algebras and Representation Theory* 17 (2014), no. 2, pp. 469–479. [\[gmcninch.math\]](#), [\[MR\]](#) and [\[DOI\]](#).
6. *On the descent of Levi factors* (2013). *Archiv der Mathematik* 100 (2013), no. 1, pp. 7–24. [\[gmcninch.math\]](#), [\[MR\]](#) and [\[DOI\]](#).
7. *Some good-filtration subgroups of simple algebraic groups* (2013). *Journal of Pure and Applied Algebra* 217 (2013), no. 12, pp. 2400–2413. With [Chuck Hague](#) (The McKeogh Company). [\[gmcninch.math\]](#), [\[MR\]](#), [\[arXiv\]](#) and [\[DOI\]](#).
8. *Levi decompositions of a linear algebraic group* (2010). *Transformation Groups* 15 (2010), no. 4, pp. 937–964. [\[gmcninch.math\]](#), [\[MR\]](#), [\[DOI\]](#) and [\[arXiv\]](#).
9. *Nilpotent centralizers and Springer isomorphisms* (2009). *Journal of Pure and Applied Algebra* 213 (2009), no. 7, pp. 1346–1363. With [Donna M. Testerman](#) (École Polytechnique Fédérale de Lausanne). [\[gmcninch.math\]](#), [\[MR\]](#), [\[DOI\]](#) and [\[arXiv\]](#).
10. *Nilpotent subalgebras of semisimple Lie algebras* (2009). *Comptes Rendus Mathématique, Académie des Sciences, Paris* 347 (2009), no. 9–10, pp. 477–482. With [Paul Levy](#) (Lancaster University) and [Donna M. Testerman](#) (École Polytechnique Fédérale de Lausanne). [\[gmcninch.math\]](#), [\[MR\]](#) and [\[DOI\]](#).
11. *The centralizer of a nilpotent section* (2008). *Nagoya Mathematical Journal* 190 (2008), pp. 129–181. [\[gmcninch.math\]](#), [\[MR\]](#), [\[arXiv\]](#) and [\[Euclid\]](#).
12. *Completely reducible Lie subalgebras* (2007). *Transformation Groups* 12 (2007), no. 1, pp. 127–135. [\[gmcninch.math\]](#), [\[MR\]](#), [\[DOI\]](#) and [\[arXiv\]](#).
13. *Completely reducible  $SL(2)$  homomorphisms* (2007). *Transactions of the American Mathematical Society* 359 (2007), no. 9, pp. 4489–4510 (electronic). With [Donna M. Testerman](#) (École Polytechnique Fédérale de Lausanne). [\[gmcninch.math\]](#), [\[DOI\]](#), [\[arXiv\]](#) and [\[MR\]](#).
14. *On the centralizer of the sum of commuting nilpotent elements* (2006). *Journal of Pure and Applied Algebra* 206 (2006), no. 1–2, pp. 123–140. [\[gmcninch.math\]](#), [\[DOI\]](#), [\[arXiv\]](#) and [\[MR\]](#).
15. *Optimal  $SL(2)$  homomorphisms* (2005). *Commentarii Mathematici Helvetici* 80 (2005), no. 2, pp. 391–426. [\[gmcninch.math\]](#), [\[arXiv\]](#), [\[DOI\]](#) and [\[MR\]](#).
16. *Nilpotent orbits over ground fields of good characteristic* (2004). *Mathematische Annalen* 329 (2004), no. 1, pp. 49–85. [\[gmcninch.math\]](#), [\[DOI\]](#), [\[arXiv\]](#) and [\[MR\]](#).
17. *Sub-principal homomorphisms in positive characteristic* (2003). *Mathematische Zeitschrift* 244 (2003), no. 2, pp. 433–455. [\[gmcninch.math\]](#), [\[arXiv\]](#), [\[DOI\]](#) and [\[MR\]](#).
18. *Faithful representations of  $SL(2)$  over truncated Witt vectors* (2003). *Journal of Algebra* 265 (2003), no. 2, pp. 606–618. [\[gmcninch.math\]](#), [\[MR\]](#), [\[arXiv\]](#) and [\[DOI\]](#).
19. *Adjoint Jordan Blocks* (2003). Unpublished manuscript of 2003. [\[gmcninch.math\]](#) and [\[arXiv\]](#).
20. *Component groups of unipotent centralizers in good characteristic* (2003). *Journal of Algebra* 260 (2003), no. 1, pp. 323–337. With [Eric Sommers](#) (University of Massachusetts Amherst). [\[gmcninch.math\]](#), [\[MR\]](#), [\[DOI\]](#) and [\[arXiv\]](#).
21. *The second cohomology of small irreducible modules for simple algebraic groups* (2002). *Pacific Journal of Mathematics* 204 (2002), no. 2, pp. 459–472. [\[gmcninch.math\]](#), [\[MR\]](#), [\[arXiv\]](#) and [\[DOI\]](#).
22. *Abelian unipotent subgroups of reductive groups* (2002). *Journal of Pure and*

- Applied Algebra 167 (2002), no. 2-3, pp. 269–300. [\[gmcninch.math\]](#), [\[DOI\]](#), [\[arXiv\]](#) and [\[MR\]](#).
23. *Filtrations and positive characteristic Howe duality* (2000). Mathematische Zeitschrift 235 (2000), no. 4, pp. 651–685. [\[gmcninch.math\]](#), [\[MR\]](#) and [\[DOI\]](#).
  24. *Semisimplicity of exterior powers of semisimple representations of groups* (2000). Journal of Algebra 225 (2000), no. 2, pp. 646–666. [\[gmcninch.math\]](#), [\[MR\]](#) and [\[DOI\]](#).
  25. *Semisimple modules for finite groups of Lie type* (1999). Journal of the London Mathematical Society 60 (1999), no. 3, pp. 771–792. [\[gmcninch.math\]](#), [\[MR\]](#) and [\[DOI\]](#).
  26. *Dimensional criteria for semisimplicity of representations* (1998). Proceedings of the London Mathematical Society 76 (1998), no. 1, pp. 95–149. [\[gmcninch.math\]](#), [\[DOI\]](#) and [\[MR\]](#).
  27. *Semisimplicity in positive characteristic* (1998). Algebraic groups and their representations, NATO Adv. Sci. Inst. Ser. C Math. Phys. Sci. 517 (1998), pp. 43–52. Kluwer Acad. Publ., Dordrecht. [\[gmcninch.math\]](#) and [\[MR\]](#).