

Curriculum Vitae

NOAH SNYDER

Office Address: Mathematics Department, Columbia University
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Date of Birth: 1980, Pennsylvania, USA

Employment/Education:

- 2009 – 2012 **NSF Postdoctoral fellow**, Columbia University
Sponsoring scientist: Dylan Thurston
- 2002 – 2009 **Ph.D. in Mathematics**, University of California, Berkeley
Advisor: Nicolai Reshetikhin
Thesis: “Quantum groups, tensor categories, and knot invariants”
- 1998 – 2002 **A.B.**, Harvard College, *magna cum laude with highest honors in Mathematics*
Advisor: Benedict Gross

Scientific/Academic Honors and Grants:

- 2011 – 2014 NSF grant DMS-1135049, Canada/USA Mathcamp: Research in pairs and scholarships for students, co-PI, \$76,608
- 2009 – 2012 National Science Foundation Mathematical Sciences Postdoctoral Research Fellowship
- 2002 – 2006 National Science Foundation Graduate Research Fellowship

Research Interests:

Quantum groups, tensor categories, low-dimensional topology, and subfactors.

Publications and Preprints:

Peer-reviewed journal articles

- 2011 1. *Subfactors of index less than 5, part 3: quadruple points*. Accepted by **Communications in Mathematical Physics**. Joint with M. Izumi, V. Jones, and S. Morrison. arXiv:math/1109.3190
- 2. *Quantum subgroups of the Haagerup fusion categories*. Joint with P. Grossman. Accepted by **Communications in Mathematical Physics**. arXiv:1102.2631
- 3. *Subfactors of index less than 5, part 2: quadratic tangles and triple points*. Joint with S. Morrison, D. Penneys, and E. Peters. Accepted by **International Journal of Mathematics**. arXiv:1007.1730
- 2010 4. *Subfactors of index less than 5, part 1: the principal graph odometer*. Joint with S. Morrison. Accepted by **Communications in Mathematical Physics**. arXiv:1007.1730
- 5. *Non-cyclotomic fusion categories*. Joint with S. Morrison. Accepted by **Transactions of the American Mathematical Society**. arXiv:1002.0168
- 6. *Cyclotomic integers, fusion categories, and subfactors*. Joint with F. Calegari and S. Morrison. **Communications in Mathematical Physics** 303 (2011), no. 3, 845896. arxiv:1004.0665

7. *Knot polynomial identities and quantum group coincidences*, **Quantum Topology** 2 (2011), no. 2, 101156 (with S. Morrison and E. Peters). arxiv:1003.0022
- 2009 8. *Constructing the extended Haagerup planar algebra*. Joint with S. Bigelow, S. Morrison, and E. Peters. Accepted by **Acta Mathematica**. arxiv:0909.4099
- 2008 9. *Skein theory for the D_{2n} planar algebras*. Joint with S. Morrison and E. Peters. **Journal of Pure and Applied Algebra** 214 (2010), no. 2, 117–139. arxiv:0808.0764
10. *The half-twist for $U_q(\mathfrak{g})$ representations*. Joint with P. Tingley. **Algebra & Number Theory** 3 (2009), no. 7, p. 809–834. arxiv:0810.0084
- 2006 11. *Groups with a character of large degree*, **Proceedings of the American Mathematical Society** 136 (2008), no. 6, 1893–1903. arXiv:math/0603239
12. *Cartan subalgebras of root-reductive Lie algebras*. Joint with E. Dan-Cohen and I. Penkov. **Journal of Algebra** 308 (2007), no. 2, 583–611. arXiv:math/0603004
- 1999 13. *An alternate proof of Mason’s theorem*, **Elemente Mathematik** 55 (2000), no. 3, 93–94.

Work in Progress

14. *The structure of tensor categories via local topological field theory*. Joint with C. Douglas and C. Schommer-Pries. ETA Winter 2011/2012.
15. *The Brauer–Picard groupoid of the Asaeda–Haagerup categories* Joint with P. Grossman. ETA Winter 2011/2012.
16. *Kashaev–Reshetikhin knot invariants* Joint with Scott Morrison. ETA Spring 2012.

Invited Lectures:

- 2012 Jan. **Joint Meetings: 3-dimensional topology and finite tensor categories**
- 2011 Dec. **Courant Institute** (Geometry seminar): *Local topological field theory and fusion categories*
- 2011 Nov. **Purdue** (Topology seminar): *Local topological field theory and fusion categories*
- 2011 Oct. **Vanderbilt** (Subfactor seminar): *The Brauer Group and Subfactors*
- 2011 Jul. **Maui Subfactor Conference**: *Small index subfactors: part 3*
- 2011 Mar. **Vanderbilt** (Subfactor seminar): *Applications of Number Theory to Subfactors*
- 2011 Mar. **Vanderbilt Colloquium**: *Finite Quantum Groups*
- 2010 Nov. **Kyoto University**: *The Arithmetic of Fusion Categories and Subfactors*
- 2010 Apr. **Macalester College** (Quantum Invariants of 3-manifolds and Modular Categories): *How to recognize $U_q(\mathfrak{g}_2)$ or S_t* .
- 2010 Feb. **U.C. Berkeley** (Subfactor Seminar): *Cyclotomic Integers and Subfactors*.
- 2010 Feb. **Vanderbilt** (Subfactors and Fusion Categories Workshop): *The extended Haagerup planar algebra and the classification of small index subfactors*.
- 2009 Oct. **Baylor** (Fusion categories and applications): *Small fusion categories and subfactors*.
- 2009 Sep. **Columbia** (Geometric Topology Seminar): *Knot polynomial identities and coincidences of small quantum groups*.
- 2009 Mar. **University of Indiana** (Modular Categories and Applications): *Coincidences of tensor categories*.
- 2009 Jan. **Joint Meetings**: *Invariants of knots with flat connections in the complement*

- 2008 Nov. **U.C. Berkeley** (Representation Theory, Geometry, and Combinatorics): *Quantum Analogues of Finite Groups*
- 2008 Oct. **U.C. Berkeley** (Topology Seminar): *Knot invariants and the D_{2n} planar algebras*
- 2008 Apr. **Vanderbilt** (Subfactors and Planar Algebras Workshop): *Unoriented or disoriented?*
- 2007 Dec. **Wellington, New Zealand** (joint AMS/NZMS meeting): *The ribbon half-twist*
- 2007 Nov. **U.C. Santa Barbara** (Station Q): *Kashaev-Reshetikhin knot invariants*
- 2007 Nov. **U.C. Santa Barbara** (Station Q): *Cactus knots and finite type knot invariants*
- 2006 Oct. **U.C. Davis** (Representation theory seminar): *Braidings for quantum groups at roots of 1.*
- 2005 Oct. **University of Oregon** (U.C. Lie theory): *Cartan subalgebras of root-reductive Lie algebras*
- 2004 Jun. **U.C. Davis**: *The abc conjecture for polynomials*

Professional Activities:

- Co-organizer of 2012 AIM workshop on “Classifying Fusion Categories” (with Scott Morrison and Eric Rowell)
- Organized the three day 2007 RTG workshop (with Nicolai Reshetikhin)
- Organized student representation theory seminar (with Jennifer Berg)
- Organized topological invariants and quantum algebra seminar

Teaching Activities:

- 2012 fall Taught “Calculus 1” (Columbia University Math 1101)
— Lectured, wrote exams, and wrote problems sets for two 80 person classes.
- 2011 spring Taught “Calculus 1” (Columbia University Math 1101)
— Lectured, wrote exams, and wrote problems sets for an 80 person class.
- 2010 fall Taught “Group Representation Theory” (Columbia University Math 4044)
— Lectured, wrote exams, and wrote problems sets.
- 2008–2009 Canada/USA Mathcamp academic coordinator
— Organized and oversaw all academics, including hiring and training of new mentors, recruiting and interacting with visiting professors, and creating a 5-week class schedule with over a dozen teachers and 20 classes per day.
- 2006–2008 Canada/USA Mathcamp mentor
— Designed and taught classes for advanced high-school students on topics ranging from unique factorization to continued fractions to planar algebras
- 2004–2005 Teaching assistant for at U.C. Berkeley (Calculus 1 and 2)
— Taught discussion sections. Each class had three hours of section per week.
- 2003–2009 Spoke in 8 different Berkeley graduate seminars totalling over 30 talks.
- 2002 Summer Sophomore tutorial instructor at Harvard
— L -functions and ζ -functions
- 2000–2001 Teaching assistant at Harvard
- 1998–2002 Ross Summer Math Program in number theory at the Ohio State University
— Taught a biweekly seminar on number theory
— Revised the daily problem sets
— Lived in the dorm for 8 weeks each summer with advanced high-school students, helping with math questions