Curriculum Vitae

Sean Ian Clark

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Personal information

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Employment

Jul. 2014 - Present	**Zelevinsky Research Instructor**, Northeastern University
Sep. 2015 - Aug. 2016	**Postdoctoral Fellow**, Max Planck Institute for Mathematics

As a visitor

Jan. 2013 - May 2013	Institute of Mathematics, Academia Sinica

Education

Sep. 2009 - May 2014	Ph.D., Mathematics, University of Virginia Advisor: Weiqiang Wang Thesis: "Quantum Supergroups and Canonical Bases"
Sep. 2005 - May 2009	B.S., Mathematics, College of William and Mary Magna Cum Laude

Research interests

My primary research interests lie in representation theory, and its connections with algebraic combinatorics, topology, geometry, and categorification. Specifically, I am most interested in the representation theory of quantum algebras, such as the quantized enveloping Lie (super)algebras, (q-)Schur (super)algebras, (quiver) Hecke algebras. I am also interested in diagrammatic algebras and categorification; the combinatorics of Young tableaux and crystals; and (quantum) knot invariants.

Selected Publications

1. *Canonical basis for quantum* $\mathfrak{osp}(1|2)$,
joint work with W. Wang,
Lett. Math. Phys. **103** (2013), pp. 207-231. arXiv:1204.3940

2. *Quantum supergroups I. Foundations*,
joint work with D. Hill and W. Wang,
Transform. Groups **18** (2013), pp. 1019-1053. arXiv:1301.1665

3. *Quantum supergroups II. Canonical basis*,
joint work with D. Hill and W. Wang,
Represent. Theory **18** (2014), pp. 278-309. arXiv:1304.7837

4. *Quantum supergroups III. Twistors*,
joint work with Z. Fan, Y. Li, and W. Wang,
Comm. Math. Phys. **332** (2014), pp. 415-436. arXiv:1307.7056

5. *Quantum supergroups IV. The modified form*,
Math. Zeit. **278** (2014), pp. 493-528. `arXiv:1312.4855`

6. *Combinatorics of super tableaux and a branching rule for the general linear Lie superalgebra*,
joint work with Y.-N. Peng and S. Thamrongpairoj,
Linear and Multilinear Algebra **64** (2015), pp. 274-282. `arXiv:1301.0174`

7. *Quantum supergroups V. Braid group action*,
joint work with D. Hill,
Comm. Math. Phys. **344** (2016), pp.25-65. `arXiv:1409.0448`

8. *Quantum shuffles and quantum supergroups of basic type*,
joint work with D. Hill and W. Wang,
Quantum Topology **7** (2016), pp. 553–638. `arXiv:1310.7523`

Preprints

9. *Quantum $\mathfrak{osp}(1|2n)$ knot invariants are the same as quantum $\mathfrak{so}(2n+1)$ knot invariants*,
submitted. `arXiv:1509.03533`

10. *Canonical bases for the quantum enveloping algebra of $\mathfrak{gl}(m|1)$ and its modules*,
submitted. `arXiv:1605.04266`

Grants and Awards

May 2015	AMS-Simons Travel Grant
May 2009	William and Mary Prize in Mathematics

Invited conference talks

June 2016	*Quantum enveloping $\mathfrak{gl}(m|1)$ and canonical bases* 2nd US-Mexico Conference on Representation theory, Categorification, and Noncommutative Algebra at University of Southern California
May 2016	*Quantum enveloping $\mathfrak{gl}(m|1)$ and canonical bases* Algebraic Groups, Quantum Groups and Geometry at University of Virginia
Dec. 2013	*Canonical bases and quantum shuffle superalgebras of basic type* Taipei Conference in Representation Theory IV at Academia Sinica, Taiwan
Nov. 2013	*A canonical basis for covering quantum groups* AMS Western Fall 2013 Sectional Meeting
May 2013	*Kac-Moody quantum supergroups and global crystal bases* Workshop on Super Representation Theory at Academia Sinica, Taiwan
Oct. 2012	*Canonical basis for quantum Kac-Moody Superalgebras* AMS Southeastern Fall 2012 Sectional Meeting
Sep. 2012	*Towards canonical bases for quantum Kac-Moody Superalgebras* AMS Eastern Fall 2012 Sectional Meeting
July 2008	*Linear preservers of higher rank numerical ranges* Workshop on Numerical Ranges and Numerical Radii at William and Mary

Seminar talks

Oct. 2016	*Canonical bases for basic type Lie superalgebras through braid operators* Representation Theory Seminar, Northeastern University
Oct. 2015	*Do Super Cats Make Odd Knots?* New Visitor Oberseminar, Max Planck Institute for Mathematics
Feb. 2015	*Quantum shuffles and Lie superalgebras of basic type* Lie Group Seminar, MIT
Jan. 2015	*Quantum Superalgebras, Canonical Bases, and Categorifications* Representation Theory Seminar, Northeastern University
May 2013	*Hall Algebras and the Jordan Quiver* Algebra Seminar, Institute of Mathematics, Academia Sinica
Mar. 2013	*Canonical basis of quantum groups and quantum shuffles* Algebra Seminar, Institute of Mathematics, Academia Sinica
Sep. 2012	*Toward canonical bases for quantum Kac-Moody superalgebras* Graduate Seminar, University of Virginia
Apr. 2012	*Canonical bases for quantized* $\mathfrak{osp}(1\|2)$ Algebra Seminar, University of Virginia

Service

Referee for CIMP, J. Reine Angew. Math., IMRN, Journal of Algebraic Combinatorics, JPAA, Representation Theory, Selecta Mathematica, Transactions of the AMS

Reviewer for Mathematical Reviews

Co-organized "Special Session on Quantum Algebras, Representations, and Categorifications" for the 2015 Spring Eastern Sectional Meeting in Washington DC

Mentoring

Co-supervised an undergraduate student S. Thamrongpairoj at UVA (now a graduate student at UC San Diego) in a research project, culminating in a joint paper 6 listed above.

Teaching experience

Postdoctoral Teaching Associate at Northeastern University:
Instructor of record: responsible for writing and giving lectures, assigning homework, writing and grading exams, assigning letter grades for course. (* indicates additional responsibilities as course coordinator)
(Course descriptions: `http://net4.ccs.neu.edu/home/rasala/bannercourse/default.aspx#!MATH`)

MATH 1365: Introduction to Mathematical Reasoning* (64 students between 2 sections)	Fall 2016
MATH 3527: Number Theory (26 students, 1 section)	Spring 2015
MATH 1342: Calculus 2 for Scientists and Engineers (129 students between 2 sections)	Fall 2014

Graduate Instructor at University of Virginia:
Instructor of record: responsible for writing and giving lectures, assigning homework, writing and grading exams, assigning letter grades for course.
(Course descriptions: `http://math.virginia.edu/courses`)

Calculus II (20-30 students per semester)	Two semesters

Calculus I (20-30 students per semester)	Three semesters
Financial Mathematics (35 students)	One semester
Applied Calculus I (30-40 students per semester)	Two semesters

Graduate Teaching Assistant at UVA:
Responsible for running an hour-long discussion section, as well as writing, administering, and grading weekly quizzes.
(Course descriptions: `http://math.virginia.edu/courses`)

Calculus III (teaching assistant, 2 sections)	Two semesters