

Curriculum Vitae

Matthew B. Young

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Personal Date of Birth: May 6, 1985
Place of Birth: Kitchener, Ontario
Citizenship: Canadian
Languages: English, French

Research Interests Moduli spaces of quiver representations. Hall algebras. Applications of quantum field theory to geometry and topology.

Education **Ph.D. Mathematics, State University of New York at Stony Brook, Stony Brook, New York**
August 2007 - Present
NSERC fellow
Advisor: Dr. Michael Movshev

B.Sc. Mathematical Physics with Distinction, Queen's University, Kingston, Ontario
September 2003 - May 2007
Honours Thesis: "An Investigation of a Potential Spin Liquid State in a Frustrated Triangular Lattice"
Advisor: Dr. Robert J. Gooding

Publications and Pre-Prints M.B. Young. "Modules Over Hall Algebras Arising from Abelian Categories with Endofunctors," *In preparation*, Feb. 2012.

M.B. Young. "Cohomological Hall Modules," *In preparation*, Jan. 2012.

R.B. Mann, M.B. Young and I. Fuentes-Schuller. "A Perturbative Approach to Inelastic Collisions in a Bose-Einstein Condensate." *J. Phys. B: At. Mol. Opt. Phys.*, **44** (2011), 085301.

R.B. Mann and M.B. Young. "Perturbative Quantum Gravity Coupled to Particles in $(1 + 1)$ -Dimensions," *Class. Quant. Grav.* **24**, 951 (2007).

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- Honours and Awards**
- NSERC Postgraduate Scholarship - Doctorate (2009 - 2012)
 - NSERC Alexander Graham Bell Canada Graduate Scholarship (Declined, 2009 - 2012)
 - NSERC Postgraduate Scholarship - Masters (2008)
 - Renaissance Technologies Fellowship in Mathematics, Stony Brook (2007)
 - Helmkay Scholarship in Mathematics, Queen's University (2006)
 - Rattray Scholarship in Science, Queen's University (2006)
 - NSERC Undergraduate Student Research Award, University of Waterloo (2006,2007)
 - NSERC Undergraduate Student Research Award, Canadian Institute for Theoretical Astrophysics (Declined, 2006)
 - Dean's Scholar, Queen's University (2004-2006)
 - Dean's Award, Queen's University (2004, 2005)
 - Dean's Scholarship in Applied Science, Queen's University (2003)
- Seminars and Presentations**
- "Hall Modules Associated to Quivers." Poster Session of Canadian Mathematical Society Winter Meeting. Toronto, Dec. 2011.
 - "Yang-Mills Theory in Two Dimensions." Hitchin Systems Seminar, Stony Brook, April 2011.
 - "Quantization Commutes with Reduction." Graduate Student Seminar, Stony Brook, March 2011.
 - "Topological Field Theories in Low Dimensions" Waterloo Geometry Working Seminar, University of Waterloo, July 2010.
 - "Open Closed Topological Field Theories." Talbot Workshop: Loop Groups and Twisted K -Theory, Breckenridge, May 2010.
 - "Analytic Continuation of Chern-Simons Theory." RTG Seminar in Geometry and Physics, Stony Brook, April 2010.
 - "Representations of Surface Groups." Graduate Student Seminar, Stony Brook, April 2010.
 - "Chern-Simons Theory, Knots and Moduli Spaces of Connections." RTG Seminar in Geometry and Physics, Stony Brook, March 2010.
 - "Equivariant Cohomology and Localization." Graduate Student Seminar, Stony Brook, Sept. 2009.
 - "Supersymmetric Gauge Theories (Two lectures)." RTG Seminar in Geometry and Physics, Stony Brook, Nov. 2008.
 - "Mathematical Foundations of Quantum Mechanics." MAT 648 Topics in Quantum Mechanics, Stony Brook, Sept. 2008.
 - "Supersymmetric σ -Models (Three lectures)." RTG Seminar in Geometry and Physics, Stony Brook, Sept. 2008.
 - "A Perturbative Approach to Inelastic Collisions in a Bose-Einstein Condensate." GWPI Poster Session, University of Waterloo, July 2007.

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- “An Introduction to TQFT.” Waterloo Symposium in Undergraduate Mathematics, University of Waterloo, June 2007.
- “An Introduction to Quantization.” Seminar on Differential Geometric Methods in Mathematical Physics, Queen’s University, Feb. 2007.
- “Bernstein’s Theorem in Algebraic Geometry.” MATH 413 Computational Commutative Algebra, Queen’s University, Dec. 2006.
- “Geometric Mechanics and Partial Differential Equations.” Canadian Undergraduate Mathematics Conference, McGill University, July 2006.

Conferences Attended

- Canadian Mathematical Society Winter Meeting, Dec. 2011.
- Aarhus Gauge Theory Workshop, Centre for Quantum Geometry of Moduli Spaces, August 2011
- Geometric and Algebraic Structures in Mathematics, Stony Brook University, May-June 2011
- Moduli Spaces and Moduli Stacks, Columbia University, May 2011
- Connections in Geometry and Physics, Fields Institute, May 2011
- Southern Ontario Geometry and Groups,, Fields Institute, March 2011
- Representation Theory and Quantization Workshop, Fields Institute for Mathematical Sciences, Feb. 2011.
- Conference on Quantization of Singular Spaces, Centre for Quantum Geometry of Moduli Spaces, Dec. 2010.
- Simons Workshop in Mathematics and Physics 2010, Simons Center for Geometry and Physics, August 2010.
- Summer School on Mathematical String Theory 2010, Virginia Polytechnic Institute and State University, June 2010.
- Talbot Workshop: Loop Groups and Twisted K -Theory, Breckenridge, Colorado, May 2010.
- Connections in Geometry and Physics II, Perimeter Institute for Theoretical Physics, May 2010.
- Second International School on Geometry and Physics: Geometric Langlands and Gauge Theory, Centre de Recerca Matemàtica, March 2010.
- Michigan Conference on Topology and Physics, Michigan Center for Theoretical Physics, February 2010. AGNES Workshop: Algebraic Geometry Northeastern Series, Stony Brook, October 2009.
- RTG Graduate Summer School in Geometry of Quantum Fields and Strings, University of Pennsylvania, June 2009.
- Workshop and Conference on Topological Field Theories, Northwestern University, May 2009.
- Connections in Geometry and Physics, Perimeter Institute for Theoretical Physics, May 2009.
- Workshop on Topology and Physics, Drexel University, September 2008.
- Motives, Quantum Field Theory, and Pseudodifferential Operators, Boston University, June 2008.
- Stony Brook Dialogues in Mathematics and Physics, Stony Brook, March 2008.

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Teaching Experience

Lecturer, Department of Mathematics, State University of New York at Stony Brook, Stony Brook, N.Y.

May 2011 - July 2011 MAT 123 Introduction to Calculus

Guest Lecturer (Four Lectures), Department of Mathematics, State University of New York at Stony Brook, Stony Brook, N.Y.

March 2011 MAT 132 Calculus II

Teaching Assistant, Department of Mathematics, State University of New York at Stony Brook, Stony Brook, N.Y.

January 2008 - May 2008 MAT 126 Calculus B

September 2007 - December 2007 MAT 171 Accelerated Calculus

Teaching Assistant, Department of Mathematics and Statistics, Queen's University, Kingston, Ontario

September 2005 - December 2005 and *September 2006 - December 2006*

MATH 237 Ordinary Differential Equations and Computer Methods

Professional Activities

Co-organizer, Graduate Student Seminar, (2010-2011)

Graduate Student Representative, Stony Brook University, (2009 - 2011)

Member, American Mathematical Society, (2007 - Present)