

JIE SUN

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Academic Appointments

- **Tenure-Track Assistant Professor - Michigan Technological University, USA, 2016-present**
- **Visiting Assistant Professor - Michigan Technological University, USA, 2013-2016**
- **Postdoctoral Scholar - University of California, Berkeley, USA, 2010-2012**
Research group: Algebra, Number Theory, Algebraic Geometry and Combinatorics
Supervisor: Prof. Vera Serganova
- **Postdoctoral Scholar - University of Ottawa, Canada, 2009-2010**
Research group: Algebra, Lie Theory and Representation Theory
Supervisor: Prof. Erhard Neher

Education

- **Ph.D. in Mathematics**, University of Alberta, Edmonton, Canada, 2004-2009
Thesis: *Descent Constructions for Central Extensions of Infinite Dimensional Lie Algebras*
Supervisor: Prof. Arturo Pianzola, **GPA: 4.0/4.0**
- **M.Sc. in Mathematics**, Beijing Normal University, Beijing, China, 2001-2004
Thesis: *Cyclotomic Temperley-Lieb Algebras of Type D*
Supervisor: Prof. Changchang Xi, **GPA: 4.0/4.0**
- **B.Sc. in Mathematics Education**, Shaanxi Normal University, Xian, China, 1997-2001
Summa Cum Laude, **GPA: 3.8/4.0**

Selected Awards and Grants

Teaching

- Dean's list, Top 10% instructors among over 1050 evaluated sections/instructors university-wide, Michigan Technological University, Spring 2015.
- Zita and John Rosen Teaching Award for Primary Instructor, University of Alberta, 2008.
Only one award across the university is granted annually to "give special recognition to a graduate student primary instructor who is an especially skilled and dedicated teacher".

Research

- National Natural Science Foundation of China (NSFC) Research Grant 11771410, co-PI, \$72,000, 2018-2021.
- Fields Institute Postdoctoral Fellowship (declined), 2013.
- NSERC Postdoctoral Fellowship, 2010-2012.

- Postdoctoral Fellowship, University of Ottawa, 2009-2010.
- Queen Elizabeth II Graduate Scholarship (Doctoral), 2008-2009.
- Third Prize for the Oral Presentation Competition in Pure Mathematics Session Canadian Young Researchers Conference, 2008.
- MSRI Travel Award for the Special Program on Representation Theory Mathematical Sciences Research Institute at Berkeley, 2008.
- International Travel Award for the Algebraic Geometry Summer School in Göttingen NATO Advanced Study Institute and University of Göttingen, 2007.
- PIMS Graduate Scholarship Pacific Institute for the Mathematical Sciences, 2007.
- IAS Travel Award for the Special Program on Algebraic Geometry Institute for Advanced Study at Princeton, 2007.
- Provost Doctoral Entrance Award, University of Alberta, 2004-2006.

Peer-Reviewed Publications (Students under Sun's supervision are indicated by “*”.)

7. J. Sun and K. Sutela*, *Inductive formulas related to prime partitions*, Bulletin of the Malaysian Mathematical Sciences Society, (2018). <https://doi.org/10.1007/s40840-018-0702-1>
6. J. Sun, *Quasisymmetric functions and Heisenberg doubles*, Journal of Algebra, Combinatorics, Discrete Structures, and Applications, 3(3) (2016), 195-200.
5. H. Chen and J. Sun, *Universal central extensions of $\mathfrak{sl}_{m|n}$ over $\mathbb{Z}/2\mathbb{Z}$ -graded algebras*, Journal of Pure and Applied Algebra, 219 (9) (2015), 4278–4294. (arXiv:1311.7079)
4. E. Neher and J. Sun, *Universal central extensions of direct limits of Lie superalgebras*, Journal of Algebra, 368 (2012), 169–181. (arXiv:1104.1001)
3. J. Sun, *Cyclotomic Temperley-Lieb algebra of type D and its representation theory*, Communications in Algebra, 38 (2010), 94–118. (arXiv:1011.4089)
2. J. Sun, *Universal central extensions of twisted forms of split simple Lie algebras over rings*, Journal of Algebra, 322 (2009), 1819–1829. (arXiv:1011.4086)
1. A. Pianzola, D. Prelat and J. Sun, *Descent constructions for central extensions of infinite dimensional Lie algebras*, Manuscripta Mathematica, 122 (2) (2007), 137–148. (arXiv:0711.3799)

Selected Invited Research Talks

21. *Central extensions of infinite dimensional Lie algebras*
Department Colloquium, University of Wisconsin, Whitewater, WI, USA, May 2018.

20. *Central extensions of infinite dimensional Lie algebras*
Department Seminar, Wilfrid Laurier University, Waterloo, ON, Canada, August 2017.
19. *Universal central extensions of twisted current algebras*
Satellite Conference of the Mathematical Congress of the Americas, Representation Theory Day, Université Laval, Québec City, QC, Canada, July 2017.
18. *Twisted current algebras and their universal central extensions*
Special Session on Noncommutative Algebras and their Representations, AMS Sectional Meeting, Minneapolis, MN, USA, October 2016.
17. *Infinite dimensional Lie algebras*
Departmental Colloquium, Michigan Technological University, MI, USA, February 2016.
16. *Symmetric functions and quasisymmetric functions*
Algebraic Combinatorics and Applications, Kliakhandler Conference, Michigan Technological University, MI, USA, August 2015.
15. *Universal central extensions of twisted current algebras*
Fields Institute Workshop from Lie Algebras to Group Schemes, University of Ottawa, ON, Canada, May 2015.
14. *Universal central extensions of $\mathfrak{sl}_{m|n}$ over $\mathbb{Z}/2\mathbb{Z}$ -graded algebras*
Special Session on Lie Algebras and Representation Theory, AMS Sectional Meeting, Eau Claire, WI, USA, September 2014.
13. *Universal central extensions of direct limits of Lie superalgebras*
Department Seminar, University of California, Berkeley, CA, USA, January 2011.
12. *Universal central extensions of twisted forms*
Department Seminar, University of Esfahan, Iran, August 2010.
11. *Direct limits of Lie algebras and their universal central extensions*
Lie Theory Workshop, University of Ottawa, ON, Canada, July 2010.
10. *Universal central extensions of direct limits of Lie algebras*
Ottawa Mathematics Conference, University of Ottawa, ON, Canada, June 2010.
9. *Universal central extensions of twisted forms*
Fields Institute Workshop on Torsors, Lie Algebras and Galois Cohomology, Ottawa, ON, Canada, March 2010.
8. *Universal central extensions of infinite dimensional Lie algebras*
Canadian Mathematical Society Winter Meeting, Windsor, ON, Canada, December 2009.
7. *Universal central extensions of twisted forms*
Algebra Seminar, Queen's University, ON, Canada, September 2009.

6. *Universal central extensions of twisted multiloop Lie tori*
Canadian Young Researchers Conference in Mathematics, University of Calgary, AB, Canada, July 2009.
5. *Faithfully flat descent constructions for central extensions*
Canadian Young Researchers Conference in Mathematics, University of Alberta, AB, Canada, May 2008.
4. *Infinite dimensional Lie algebras given by faithfully flat descent*
Canada Pure Math Graduate Student Conference, Simon Fraser University, BC, Canada, October 2007.
3. *Descent constructions in infinite dimensional Lie theory*
Bonn Köln Algebra Seminar, University of Köln, Germany, July 2007.
2. *Multiloop realizations of extended affine Lie algebras and twisted forms*
Canadian Conference for Young Researchers in Mathematics, University of Calgary, AB, Canada, May 2007.
1. *Lifting automorphisms and descent constructions*
Special Program on Algebraic Geometry, Institute for Advanced Study, Princeton, NJ, USA, May 2007.

Teaching Experiences

Primary Instructor in Mathematics, Michigan Technological University, 2013-present

- Abstract Algebra MA 4310 (17 students), Spring 2019.
- Introduction to Abstract Algebra MA 3310 (37 students), Fall 2018. (Student Eva: **4.54/5**)
- Calculus with Technology I MA 1160 (44 students), Fall 2018. (Student evaluation: **4.29/5**)
- Theory of Numbers MA 4908, Spring 2013, 2014, 2015, 2016, 2017, 2018. (Ave. Eva: **4.44/5**)
- Graduate Algebra I MA 5301 (6 students), Fall 2017. (Student evaluation: **3.76/5**)
- Calculus with Technology I MA 1161, Fall 2014, 2015. (Ave. Eva. **4.26/5**)

Primary Instructor in Mathematics, University of California, Berkeley, Summer 2012

- Abstract Algebra Math 113 (35 students) in Summer 2012, Student evaluation: **6.06/7.0**

Primary Instructor in Mathematics, University of Ottawa, 2009-2010

- Calculus and Vectors Math 1339B (66 students) in Winter 2010, Student evaluation: **4.44/5.0**
- Calculus and Vectors Math 1339A (156 students) in Fall 2009, Student evaluation: **4.05/5.0**

Primary Instructor in Mathematics, University of Alberta, 2007-2009

- Number Theory Math 324 B1 (7 students) in Summer 2009, Student evaluation: **5.0/5.0**

- Linear Algebra Math 120 D1 (89 students) in Fall 2007, Student evaluation: **4.6/5.0**
- Linear Algebra Math 120 B1 (19 students) in Summer 2007, Student evaluation: **4.0/5.0**

Teaching Assistant, University of Alberta, 2004-2008 (seven academic semesters)

Teaching Professional Development

Practicum in University Teaching, University of Ottawa, 2009-2010

Practicum in University Teaching (ESG 8300) is a credit course offered by the Faculty of Graduate and Postdoctoral Studies and the Centre for University Teaching (CUT) to strengthen the academic teaching careers of participants.

- Completed more than 20 hours of instructional workshops which provide valuable tools to enhance teaching and to offer a better learning experience to students.

University Teaching Program, University of Alberta, 2004-2009

University Teaching Program is offered by the Faculty of Graduate Studies and Research and the University Teaching Services (UTS) with the aim of developing graduate students' ethical, philosophical and practical basis for careers in post-secondary teaching.

- Completed more than 50 hours of formal classroom training which covers a wide range of theoretical teaching topics through seminars and workshops, approved by the assigned teaching mentor and UTS appraiser.

How to Teach Mathematics Seminar, University of Alberta, 2006-2008

- Completed over 10 hours of seminar talks given by faculty members with demonstrated strengths in teaching from the Department of Mathematical and Statistical Sciences. These talks addressed some specific difficulties of teaching math courses at the university level.

Academic Advising

Ph.D. Students Supervision

- Supervising Yasasya Batugedara, Michigan Technological University, 2019-present.
Research Topic: Applications of Lie algebras to combinatorics.
- Jezerca Hodaj, Michigan Technological University, 2013-2014.
Research topic: Structures of Lie algebras.

M.Sc. Students Supervision

- Dale Bigler, Michigan Technological University, 2017-present.
Research topic: Universal central extensions of direct limits of Hom-Lie superalgebras.
This research was presented at the AMS Fall Central Meeting in Ann Arbor, MI, Oct. 2018.

Undergraduate Students Supervision

- Dale Bigler, Michigan Technological University, Summer 2017.
Research topic: Towers of Algebras Related to the Symmetric Groups and the Hecke Algebras.
This research proposal received the Summer Undergraduate Research Fellowship from Michigan Technological University and the research result was presented at the Joint Mathematics Meetings in San Diego, CA, USA, Jan. 2018.
- Kyle Sutela, Michigan Technological University, Fall 2016, Summer 2017.
Research topic: Prime partitions.
This research was presented at the Joint Mathematics Meetings in San Diego, CA, Jan. 2018.
- Floyd Johnson, Michigan Technological University, Summer 2016, Fall 2016.
Research topic: ETRU cryptosystem.
This research was presented at the Joint Mathematics Meetings in Atlanta, GA, Jan. 2017.
- Co-supervised one NSERC summer student doing research projects on representation theory of finite groups, University of Ottawa, 2010.
- Co-supervised one undergraduate student enrolled in Math 4142 Introduction to Lie Algebras doing research projects on representation theory of Lie algebras, Univ. of Ottawa, Fall 2009.
- Supervised two undergraduate students enrolled in Math 324 Number Theory doing research projects on applications of number theory to cryptography, Univ. of Alberta, Summer 2009.

Professional Services

- Reviewer for *Journal of Algebra*, *Zentralblatt MATH*, *Czechoslovak Mathematical Journal*.
- Member of Department Graduate Committee, Michigan Technological University (MTU), 2018-2019.
- Member of PhD Comprehensive Examinations Committee, MTU, Spring 2019.
- Writing and Grading Qualifying Examinations, MTU, Fall 2016, Spring 2017, Fall 2017, Fall 2018, Spring 2019.
- External PhD Proposal Committee Member, MTU, Fall 2018.
- Member of Department Undergraduate Committee, MTU, 2017-2018.
- Reviewer for the Summer Undergraduate Research Fellowship proposals, MTU, Spring 2018.
- External PhD Defense Committee Member, MTU, Spring 2017.
- Member of Organizing Committee for the First Annual Kliakhandler Conference, MTU, 2015
- Academic Activities Coordinator for Graduate Students, University of Alberta, 2008-2009
Organized three different series of seminars: Graduate Colloquium, History of Mathematics and How to Teach Math with over 20 talks given by faculty members, graduate students and visiting scholars.

- Member of Organizing Committee for CYRC, University of Alberta, 2008

Co-organized the fifth annual CYRC (Canadian Young Researchers Conference) in Mathematics and Statistics with over 40 research talks presented from 10 universities across Canada.