

Will Traves

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Recent Positions

United States Naval Academy (1999-Present), Professor
Dalhousie University (2008-Present), Adjunct Professor
University of Maryland (2005-06, 2012-13), Visiting Professor
Mathematical Sciences Research Institute (1998), Visiting Member
The University of Michigan (1998), NSERC Postdoctoral Fellow

Education

University of Toronto (1993 – 1998), M.Sc. and Ph.D. in Mathematics
Thesis: Differential Operators and Nakai's Conjecture
Advisors: Karen E. Smith (The University of Michigan) and Mark Spivakovsky
Queen's University (1989 – 1993), B.Sc.H. in Mathematics

Research Interests

Enumerative Algebraic Geometry and Commutative Algebra
Computational Commutative Algebra
Operations Research

Major Awards

Merten M. Hasse Award, Mathematical Association of America, 2009
Lester R. Ford Award, Mathematical Association of America, 2009
USNA Research Excellence Award, Dept. Nominee: 2007, 2008, 2011
Naval Academy Research Council, 1999–2005, 2007
Supported Visitor, Research Institute for Symbolic Computation, Austria, 2006
NSF Travel Awards, 2000, 2002, 2003
NSA Research Grant, 2001, 2002: deferred both years
USNA Apgar Award for Excellence in Teaching, Honorable Mention, 2001
NSERC Postdoctoral Fellowship, 1998-2000
Daniel B. Delury Teaching Award, University of Toronto, 1996

Professional Activities

Project NExT: Based on participation as a national Project NExT fellow (1999) and mentor (2005, 2011), I developed a regional program (spanning the MD-DC-VA area) to develop teaching effectiveness among new mathematics faculty and to encourage new faculty to share experiences with senior mentors. The program accepts about 10 new fellows each year and has been a highly successful part of the MD-DC-VA section of the MAA. Fellows gather at the section's fall and spring meetings to discuss issues related to teaching and professional development.

MAA Executive Board: I was newsletter editor and secretary for the Executive Board of the MD-DC-VA section of the MAA from 2002-2006.

Conference Organization: I co-organized two special sessions in Commutative Algebra at AMS-CMS joint meetings, in Toronto (2000) and Montreal (2004).

Communications Security Establishment of Canada: For the last ten years I've served as a mathematics consultant to the Government of Canada.

Referee and Reviewer: Referee for the National Science Foundation and 11 journals. Reviewer for Math Reviews.

Waverley Algebra Salon: Founding member of a math discussion group that meets monthly in Baltimore.

**Selected
Publications**

- [1] Will Traves. From Pascal's Theorem to d -Constructible Curves. To appear in the *American Mathematical Monthly*. 18 pages.
- [2] Will Traves and Max Wakefield. Derivation radical subspace arrangements. *Journal of Pure and Applied Algebra* **215** (2011), no. 6, 1492–1501.
- [3] Karen Smith, Lauri Kahanpää, Pekka Kekäläinen, and William Traves. An invitation to algebraic geometry. *Springer-Verlag (New York)*, 2010, 224 pages. [Paperback edition of our book, originally published in 2000. It has since been translated into Persian and Finnish.]
- [4] Will Traves. Differential operators on Grassmann varieties. *Symmetry and spaces*, 197–207, *Progr. Math.*, **278**, *Birkhäuser Boston, Inc., Boston, MA*, 2010.
- [5] Andrew Bashelor, Amy Ksir and Will Traves. Enumerative algebraic geometry of conics. *American Mathematical Monthly* **115** (2008), no. 8, 701–728.
- [6] Kia Dalili, Sara Faridi, and Will Traves. The reconstruction conjecture and edge ideals. *Discrete Math.* **308** (2008), no. 10, 2002–2010.
- [7] Will Traves. Invariant theory and differential operators. *Gröbner bases in symbolic analysis*, 245–265, *Radon Ser. Comput. Appl. Math.*, **2**, *Walter de Gruyter, Berlin*, 2007.
- [8] Will Traves. Differential Operators on Orbifolds. *Journal of Symbolic Computation*. **41** (2006), 1295–1308.
- [9] Mutsumi Saito and Will Traves. Finite generation of rings of differential operators of semigroup algebras. *Journal of Algebra* **278** (2004), 76–103.
- [10] T.S. Michael and Will Traves. Independence Sequences of Well-Covered Graphs: Non-Unimodality and the Roller Coaster Conjecture. *Graphs and Combinatorics* **19** (2003), 403–411.
- [11] Will Traves. Localization of the Hasse-Schmidt Algebra. *Bull. Canadian Math. Society*. **406** (2003), 304–309.
- [12] Mutsumi Saito and Will Traves. Differential algebras on semigroup algebras. *Symbolic computation: solving equations in algebra, geometry, and engineering (South Hadley, MA, 2000)*, 207–226, *Contemp. Math.* **286**, *Amer. Math. Soc., Providence, RI*, 2001.
- [13] Will Traves. Tight Closure and Differential Simplicity. *Journal of Algebra*. **228** (2000), 457–476.
- [14] Will Traves. Nakai's Conjecture for Varieties Smoothed By Normalization. *Proc. American Mathematical Society* **127** (1999), 2245–2248.
- [15] Will Traves. Differential Operators on Monomial Rings. *Journal of Pure and Applied Algebra*. **136** (1999), 183–187.

**Invited
Presentations**

RTG Workshop on Tensor Analysis, U.C. Berkeley (2012)
Special Session, AMS-SIAM Meeting, New Orleans, LA (2011)
Special Session, AMS Meeting, Lexington, KY (2010)
Special Session, CMS Meeting, Ottawa, Canada (2008)
Workshop in Systems of Differential Equations and Related Topics, Sapporo, Japan (2007)
Research Institute for Symbolic Computation, Austria (2006)
Conference on Gröbner Bases, Tokyo, Japan (2005)
International Summer School on D-modules, Lisbon, Portugal (2005)
RSME and AMS Joint Meeting, Seville, Spain (2003)
European Invariant Theory Conference, Göttingen, Germany (2003)
Maui High Performance Computing Center, Maui, Hawaii (2002)
Colloquia and Seminar talks: USNA, Dalhousie University, Queen's University, Howard University, Towson University, American University, U.C. Berkeley, University of Toronto, the University of Michigan and the Fields Institute.

**Institutional
Activities**

Teaching: I teach a variety of undergraduate mathematics classes at the United States Naval Academy, including Calculus, Linear Algebra and Linear Programming. The course load is 3/2 and significant amounts of time are required for extra instruction during office hours.

Mentoring Student Projects: As a faculty member at an undergraduate institution I mentor many undergraduate projects. These range from students writing capstone papers (reports on published work in the literature) to honors projects (full semester undergraduate research courses) and Trident projects (full year research projects replacing 4 courses per semester). In the last ten years I supervised 3 Trident projects, 4 honors projects and 11 capstone papers. Four of my students were minority students and three have gone on to studies at graduate school.

Admissions Board: I am currently serving my third year on the board, which qualifies applicants for admission to the U.S. Naval Academy. Each year we have nearly 20,000 applicants for 1,250 spots. This activity requires about 2 full days of work per week.

References

Professor Geoff L. Price,
Chairman, Department of Mathematics, United States Naval Academy.
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Professor Karen E. Smith, The University of Michigan.
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Associate Professor Amy Ksir, United States Naval Academy.
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Keith A. Pardue, National Security Agency, Math Research Division.
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