

David Shea Vela-Vick

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Education

University of Pennsylvania Philadelphia, PA
Ph.D. in Mathematics, Expected May 2009
Advisor: John B. Etnyre
Research Interests: Low-Dimensional Topology, Contact Geometry,
Knot Theory, Differential Geometry

Rice University Houston, TX
B.A. in Mathematics *magna cum laude*, May 2004

Honors and Awards

NSF Mathematical Sciences Postdoctoral Research Fellowship Columbia University	2009-
Dean's Award for Distinguished Teaching by a Graduate Student University of Pennsylvania	Spring 2009
Penn Prize for Excellence in Teaching Honorable Mention: University of Pennsylvania	Fall 2005
Departmental Good Teaching Award University of Pennsylvania	2005, 2006, 2008
Benjamin Franklin Fellowship University of Pennsylvania	2004-2009
Frank Jones Scholarship Rice University	Summer 2003

Publications

Sutured Floer Homology and Contact Structures on Solid Tori
Preprint, 2009

Legendrian and Transverse Link Invariants
Joint with John B. Etnyre: Preprint, 2008

Triple Linking Numbers, Hopf Invariants and Integral Formulas for Three-Component Links

Joint with Dennis DeTurck, Herman Gluck, Rafal Komendarczyk, Paul Melvin, and Clayton Shonkwiler: Submitted, 2009. [arXiv:math/0901.1612](https://arxiv.org/abs/math/0901.1612)

On the Transverse Invariant for Bindings of Open Books

Submitted, 2008. [arXiv:math/0806.1729](https://arxiv.org/abs/math/0806.1729)

Higher-Dimensional Linking Integrals

Joint with Clayton Shonkwiler: Submitted, 2008. [arXiv:math/0801.4022](https://arxiv.org/abs/math/0801.4022)

The Four Vertex Theorem and its Converse

Joint with Dennis DeTurck, Herman Gluck, and Daniel Pomerleano: Notices Amer.

Math. Soc. **54**, 2007, No. 2, 192-207.

Talks and Presentations

Invited Talks:

Transverse Invariants and Bindings of Open Books Spring 2009
AMS Sectional Meeting: Raleigh, NC

Triple Linking Numbers, Ambiguous Hopf Invariants and Integral Formulas for Three-Component Links Spring 2009
Haverford College Colloquium

Triple Linking Numbers, Ambiguous Hopf Invariants and Integral Formulas for Three-Component Links Spring 2009
Topology Seminar: Wesleyan University

Transverse Invariants and Bindings of Open Books Spring 2009
Texas Christian University

Gauss-Bonnet: A Mathematical Bridge Spring 2009
Texas Christian University

Transverse Invariants and Bindings of Open Books Spring 2009
Eidgenössische Technische Hochschule - Zürich

Transverse Invariants and Bindings of Open Books Fall 2008
Geometry Seminar: Temple University

On the Transverse Invariant for Bindings of Open Books Fall 2008
Joint USC/UCLA Topology Seminar: University of California

On the Transverse Invariant for Bindings of Open Books Fall 2008
AMS Sectional Meeting: Wesleyan University

Legendrian and Transverse Link Invariants Fall 2008
AIM Workshop: Palo Alto, CA

Higher-Dimensional Linking Integrals Spring 2008
Topology Seminar: University of Georgia

The Four-Vertex Theorem and its Converse Fall 2006
Geometry-Topology Seminar: Georgia Institute of Technology

The Four-Vertex Theorem and its Converse Fall 2006
Geometry Seminar: University of Georgia

Other Talks:

Open Books and the Ozsváth-Szabó Contact Invariant Spring 2009
Geometry-Topology Reading Seminar: University of Pennsylvania

Classifying Maps from a 3-Manifold to a 2-Sphere Spring 2009
Graduate Bridge Seminar: University of Pennsylvania

<i>Legendrian and Transverse Link Invariants</i> Graduate Geometry-Topology Seminar: University of Pennsylvania	Fall 2008
<i>On the Transverse Invariant for Bindings of Open Books</i> Philadelphia Area Contact/Topology Seminar: Bryn Mawr College	Spring 2008
<i>Arnol'd's Dream: Higher Order Helicity Invariants</i> Geometry-Topology Reading Seminar: University of Pennsylvania	Spring 2008
<i>Contact Geometry and Heegaard Floer Homology (4 talks)</i> Philadelphia Area Contact/Topology Seminar: Bryn Mawr College	Spring 2008
<i>Legendrian and Transverse Invariants from Heegaard Floer Homology</i> Graduate Geometry-Topology Seminar: University of Pennsylvania	Spring 2008
<i>Heegaard Floer Homology and Sutured Manifolds</i> Graduate Geometry-Topology Seminar: University of Pennsylvania	Fall 2007
<i>Hamiltonian Dynamics and Periodic Reeb Orbits</i> Graduate Student Seminar: University of Pennsylvania	Fall 2007
<i>Contact Invariants from Heegaard-Floer Homology</i> Graduate Geometry-Topology Seminar: University of Pennsylvania	Spring 2007
<i>Khovanov Homology and the Rasmussen s-Invariant</i> Geometry-Topology Reading Seminar: Georgia Institute of Technology	Fall 2006
<i>An Introduction to Khovanov Homology</i> Geometry-Topology Reading Seminar: Georgia Institute of Technology	Fall 2006
<i>Taut to Tight: Foliations to Contact Structures</i> Geometry-Topology Seminar: University of Pennsylvania	Summer 2006
<i>On Khovanov Homology and the Slice Genus</i> Graduate Geometry-Topology Seminar: University of Pennsylvania	Spring 2006
<i>A Few Facts About 3-Manifolds</i> Graduate Student Seminar: University of Pennsylvania	Fall 2005
<i>The Lickorish-Wallace Theorem (2 talks)</i> Graduate Geometry-Topology Seminar: University of Pennsylvania	Fall 2005
<i>Knots, S-Equivalence, and the Double-Delta Move (2 talks)</i> Graduate Geometry-Topology Seminar: University of Pennsylvania	Spring 2005
<i>The Pentagonal Number Theorem</i> Undergraduate Colloquium: Rice University	Spring 2003
<i>A Recursion on Quadruples</i> Undergraduate Colloquium: Rice University	Fall 2002

Teaching Experience

Teaching Assistant: Honors Calculus II, Algebraic Topology, Calculus III, Calculus II University of Pennsylvania	2005-2008
Instructor: Calculus III, Introduction to Calculus University of Pennsylvania	2005-2007

Teaching Assistant: PCMI Summer Session John B Etnyre's "Contact Geometry in Low-Dimensions": Park City Mathematics Institute	Summer 2006
Grader: Algebraic Topology, Ideas in Mathematics University of Pennsylvania	2005-2009
Tutor: Math Help Center University of Pennsylvania	Spring 2005-
Lecturer: Potpourri–Special Topics in Mathematics Rice University	Spring 2004
Frank Jones Scholarship Program Rice University	Summer 2003
Participant: CTL Teaching Workshops Participated in several teaching workshops sponsored by the Center for Teaching and Learning at the University of Pennsylvania.	2008-

Professional Service

Contributor, Founding Editorial Board Member AMS Graduate Student Blog.	2009-
Organizer, Panel Member Landing a Job: A panel discussion on the application process.	2009
Curriculum Development Together with Asher Auel and Andrew Obus, spearheaded the develop- ment of the University of Pennsylvania's Math 116/260, a rigorous intro- duction to calculus, which is first being offered in Fall 2008.	2007-2008
Co-founder, Coordinator Undergraduate Seminar: University of Pennsylvania	Spring 2009
Graduate Mentor Mentor to Nick Watson and Dimitri Dziabenko as part of the Undergrad- uate Seminar: University of Pennsylvania	Spring 2009
Coordinator, Lecturer Low-Dimensional Topology Seminar: University of Pennsylvania	2007-
Coordinator Graduate Student General Seminar: University of Pennsylvania	2006-2007
Representative Graduate Student Associations Council: University of Pennsylvania	2005-2006
Rice Alumni Volunteer for Admission Activities include representing Rice University at college fairs and per- forming alumni interviews: Rice University	2004-

Conferences and Workshops Attended

Geometry Festival	Spring 2009
AMS Sectional Meeting in Raleigh, NC	Spring 2009
Joint Meetings of the AMS and the MAA	Spring 2009
Geometry, Topology, and Physics 2008	Fall 2008

AMS Sectional Meeting at Wesleyan University	Fall 2008
AIM Workshop: "Legendrian and Transverse Knots"	Fall 2008
XV Brazillian School of Differential Geometry	Summer 2008
Georgia Topology Conference	Spring 2007
Geometry and the Imagination	Spring 2007
Geometry Festival	Spring 2007
Texas Geometry Topology Conference	Fall 2006
Park City Mathematics Institute Summer Session	Summer 2006
Geometry Festival	Spring 2006
Geometry Festival	Spring 2005
Joint Meetings of the AMS and the MAA	Summer 2004
Texas Geometry Topology Conference	Spring 2004

Professional Memberships

American Mathematical Society	2003-
Association for Women in Mathematics	2005-
Mathematical Association of America	2008-
Society for Industrial and Applied Mathematics	2005-
Phi Beta Kappa	2004-

References

John B. Etnrye Georgia Institute of Technology	Thesis Advisor
Herman Gluck University of Pennsylvania	Research Reference
Ko Honda University of Southern California	Research Reference
Paul Melvin Bryn Mawr College	Research Reference
Antonella Grassi University of Pennsylvania	Teaching Reference
