

Leonard A. Van Wyk

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Education

Ph.D. in Mathematics. State University of New York at Binghamton. Dissertation topic at the interface of group theory, topology, and theoretical computer science. Dissertation advisor: Craig C. Squier.

M.A. in Mathematics. University of California at Berkeley.

B.A. in Physics and Mathematics. State University of New York at Potsdam.

Faculty Teaching Experience

James Madison University, Harrisonburg, VA. FALL 1998 – PRESENT. Professor. Taught Calculus I, Calculus II, Calculus III, a combination Calculus/precalculus sequence, a freshman-level discrete mathematics course for CS majors, business Calculus, abstract algebra I–II, geometry, discrete mathematics, graph theory, elementary number theory, a combination linear algebra/differential equations course, an upper-level linear algebra course, a capstone course for future high school teachers, topology, knot theory, a first math course for future K-8 teachers, algebra for future K-8 teachers, geometry for future K-8 teachers, an introduction to category theory and moduli spaces, and a liberal-arts mathematics course.

Lafayette College, Easton, PA. FALL 1997 – SPRING 1998. Assistant Professor. Taught Calculus I–II and business Calculus.

Hope College, Holland, MI. FALL 1994 – SPRING 1997. Assistant Professor. Taught precalculus, Calculus I–II, vector Calculus, geometry, abstract algebra I–II, and topology.

Boston College, Chestnut Hill, MA. SPRING 1994. Adjunct Professor. Taught Calculus II.

Suffolk University, Boston, MA. FALL 1992 – SPRING 1994. Adjunct Professor. Taught Pascal and a business Calculus course.

Pre-PhD Teaching Experience

SUNY at Binghamton, Binghamton, NY. FALL 1987 – SPRING 1992. Graduate Student Instructor. Course administrator for large Calculus I–II lectures; taught basic algebra, intermediate algebra & trigonometry, Calculus I–II, and “Introduction to Higher Mathematics.”

Broome Community College, Binghamton, NY. SUMMER 1988. Adjunct Instructor. Taught Calculus II.

North Country Community College, Saranac Lake, NY. FALL 1985 – SPRING 1987. Assistant Professor. Taught intermediate algebra, trigonometry, Calculus I–IV, and physics I–II.

DeAnza College, Cupertino, CA. FALL 1984 – SPRING 1985. Adjunct Instructor. Taught trigonometry, analytic geometry, and Calculus I.

Industry Experience

Lockheed Missiles and Space Company, Sunnyvale, CA. FALL 1980 – SUMMER 1985 AND SUMMER 1989. Associate Engineer Senior. Tasks included research, development, and computer implementation of optimization methods and gravity models for use in satellite guidance.

Computer Experience

Experienced with the Unix and VMS operating systems; BASIC, FORTRAN, and Pascal languages; \TeX , \LaTeX , $\mathcal{A}\mathcal{M}\mathcal{S}\text{\LaTeX}$, and HTML typesetting programs; Maple and Mathematica mathematical computational software.

Relevant Service Experience

PI for NSF-sponsored Research Experiences for Undergraduates (REU) program during the summers 2002 – 2005, 2007 – 2014.

Mentored students for NSF-sponsored REU programs during the summers of 1995, 1996, 2002, 2003, 2007, and 2013.

Co-PI, with Ralph Grove in the Computer Science Department, of the NSF grant, “Building technical and scientific competency in the American workforce,” 2002 – 2006.

Supervised Putnam Teams for JMU (1998-04), Lafayette College (1997), Hope College (1994-96), and Suffolk University (1993).

Chair numerous times for search committees, the pure mathematics committee, PAC, and the C& I committee.

Wrote too many web pages using basic html.

Publications

A parabolic explanation of completing the square, Mathematics Teacher: Learning and Teaching PreK-12, accepted (2023).

AN AXIOMATIC CONSTRUCTION OF THE REAL NUMBER SYSTEM – a free textbook available through the JMU Scholarly Commons (2021).

When two wrongs make a right, Mathematics Magazine, Volume 93, Issue 5 (2020).

Rounding versus truncation estimates in difference calculations, The Mathematical Gazette, 285–292 (July 2019).

Knots, molecules, and the universe: an introduction to topology, Erica Flapan. Contributor. 386 pp. (2016)

One-Singular Knots, with Laura Taalman and REU students David Brown, Sarah Nicholson, Ryan Stees, and Katie Tucker. Preprint (2014).

Spiral knots, with Laura Taalman and REU students Nathan Brothers, Sean Evans, Debra Witzcak, and Carolyn Yarnall, Missouri. J. of Math. Sci. Vol. 22 Number 1, 10 - 18 (2010).

The REU program at James Madison University, Math Horizons, (February 2006).

k-alternating knots, with the REU students Philip Hackney and Nathan Walters, Top. Appl. **150** 125–131 (2005).

Notes on the structure of $P\Sigma^n$, with the REU students Rebecca Dolphin and Erin Corman, Missouri J. of Math. Sci. Vol. 17 No. 1 12–25 (2005).

Building a summer research community, with D. Brakke, D. Downey, G. MacDonald, W. Hughes, and D. Wubah, Council on Undergraduate Research Quarterly, Vol. 24, No. 1 (2003).

On the Σ -invariants of Artin groups, with John Meier and Holger Meinert, Top. Appl. **110** 71–81 (2001).

Starting our careers, edited by Curtis Bennett and Annalisa Crannell. Contributor. 115 pp. (1999)

The Σ^2 -invariants for graph products of indicable groups, with John Meier and Holger Meinert, Top. Appl. **99** 41–65 (1999).

Higher generation subgroup sets and the Σ -invariants of graph groups, with John Meier and Holger Meinert, Comment. Math. Helv. **73** 22–44 (1998).

Presentations of subgroups of Artin groups, with the REU students Jennifer Becker and Matthew Horak, Missouri J. of Math. Sci. Vol. 10 No. 1 3–14 (1998).

Finite presentation of subgroups of graph groups, with the REU students Joshua Levy and Cameron Parker, Missouri J. of Math. Sci. Vol. 10 No. 2 70–82 (1998).

Finiteness properties and abelian quotients of graph groups, with John Meier and Holger Meinert, Math. Res. Letters **3** 779–785 (1996).

On the higher Σ -invariants of graph groups, with John Meier, preprint (1995).

The Bieri-Neumann-Strebel invariants for graph groups, with John Meier, J. of the London Math. Soc. (3) **71** 263–280 (1995).

Graph Groups are Biautomatic, J. Pure Appl. Algebra **94** 341–352 (1994).

SAMSON Trajectory Optimization Description for Users, LMSC internal report (1989).

On a Spherical Harmonic Gravity Model, LMSC internal report (1982).