

# CURRICULUM VITAE OF DAVID RODRIGUEZ NACIN

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## Postal Address:

Department of Mathematics  
William Paterson University  
300 Pompton Road  
Wayne, NJ 07470  
USA

**Tel:** +1 (973) 720-3380  
**Fax:** +1 (979) 720-2263  
nacind@wpunj.edu  
<http://www.wpunj.edu/cosh/departments/math/faculty.dot>

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## PROFESSIONAL EMPLOYMENT

2005–present *Assistant Professor*, Mathematics Department, William Paterson University (WPU), Wayne, NJ (Hired at this rank in 9/2005)  
1997–2005 *Instructor*, Rutgers University, New Brunswick, NJ

## EDUCATION

**Rutgers, The State University of New Jersey** *New Brunswick, NJ*  
Ph.D. *Structural Properties of Algebras Arising From Pseudoroots*, May 2005  
Directed by Robert L. Wilson  
B.A. Mathematics, summa cum laude, (4.0 GPA) May 1997

## RESEARCH INTERESTS

Non-commutative Algebra and Combinatorics

## GRANTS, HONORS & AWARDS

William Paterson University – ART Award, 2006, 2007, 2008 and 2010  
William Paterson University – CfR Fellowship, 2006, 2007, 2008 and 2009  
MAA – NJ NExT Fellow, 2007–2008  
MAA – Project NExT Fellow, 2005–2006  
Rutgers University – Louis Bevier Dissertation Fellowship, 2004–2005  
DIMACS – Graduate Support Award, Summers 2003 & 2004  
Rutgers University – Teaching Excellence Award, 2000  
Rutgers University – Minority Advancement Program Fellowship 1997-1999  
Rutgers University – Minorities in Computer Science Excellence Award 1996

## PUBLICATIONS

### Refereed Journal Articles

D. Nacin, *Odd Sums*, Mathematics Magazine, 82(1):64–65, 2009.  
D. Nacin, *Structural Properties of the Graph Algebra  $K_3$* , J. Pure and Appl. Algebra, 212(3):541–549, 2008.  
D. Nacin, *An Introduction to  $Q_n$  and its Graph Related Quotients*, Contemporary Mathematics, 442: 171-178, 2007.  
D. Nacin, *The Algebra  $P_n$  is Koszul*, Comm. in Algebra, 35(4):1291-1306, 2007.

### **In Preparation**

D. Nacin, *Vertex Orderings and PBW Algebras*

D. Nacin, *Generalized Derivation Towers of Lie Algebras*

### **TEACHING**

#### **University Courses**

*Instructor*

WPU, *History of Mathematics, Mathematics for Teachers, Topology, Logic and Methods, Advanced Calculus, Modern Algebra, Calculus I, Calculus II, Algebra, Trigonometry and Functions, Quantitative Methods I, Real Analysis, Advanced Discrete*, 2005–present

Rutgers University, *Introduction to Linear Algebra, Theory of Numbers, Combinatorial Theory, Theory of Probability, Introduction to Cryptography, Calculus I*, Summers 1997–2005

*Teaching Assistant*

Rutgers University, *Pre-calculus, Calculus I, Calculus*, 1999–2005

#### **Capstones**

*An Incorrect Proof of the Four Color Theorem*, Odete Ramalho

*Mathematics and Football*, Brian Russo

*Rootless Matrices*, Jeff Dwuyhaver

*Smith Numbers*, Valerie Ardrens

*Mathematical Magic*, David Weber

*Counting Train Track Layouts*, Beth Jacobs

*Solving the Hilbert Series for the Path on  $n$  nodes*, Joseph Greco

*Braid Group Cryptography*, David Guerra

*The Probability of Relatively Prime Polynomials*, Cynthia Flim

*Groups That Sit Properly Inside Themselves*, Danielle Gasparro

*Wazir Circuits on an Obstructed Chessboard*, Natasha Davis

*Tropical Mathematics*, Jeff Fiscina

*Jump Home and Shift: A Permutation Operation*, Nicole Burchell

*Matroid Theory*, Daniel Thomas

*Polynomials Have Prime-Rich Images*, Samantha Parnes

*Combinatorial Games*, Lauren Sanchez

#### **Reading Courses**

*Number Theory*, David Guerra and Philip Nelson

*Advanced Cryptography*, David Guerra

*Mathematics of Music*, Jennetta George

**SERVICE****Professional**

*Consultant*, NJ-NExT, Spring 2011 – present

*Referee*, Mathematics Magazine, 2006 – present

*Technical Editor*, “Calculus II for Dummies” by Mark Zegarelli, Spring 2008

*Co-organizer*, MAA-NJ Spring Meeting, April 2008

*Judge*, Undergraduate Poster Session, Joint Mathematics Meetings, New Orleans, January 2007

**Departmental**

*Member*, Math Department Council, WPU, Fall 2010 – Spring 2011

*Member*, Retention and Tenure Committee, WPU, Fall 2010 – Spring 2011

*Advisor*, Math Club and Activities, WPU, Fall 2008 – Spring 2011

*Coach*, WPUNJ Problem Solving Group, Spring 2007 – present

*Library Liason*, WPU, Fall 2007 – Summer 2010

*AMS, MAA, & SIAM Representative*, WPU, Fall 2007 – Summer 2010

*Faculty Advisor*, Garden State Undergraduate Mathematics Competition, March 2007, March 2008, March 2009, March 2010 and March 2011

*Coordinator*, Math Fair, WPU, Fall 2006 – Fall 2009

*Member*, Curriculum Committee, WPU, Fall 2006 – Spring 2007

*Coordinator*, Math Awareness Week, WPU, Fall 2005 – Spring 2008

*Seminar Coordinator*, WPU, Fall 2005 – Summer 2006 & Fall 2010 – Spring 2011

*Recording Secretary*, WPU, Fall 2005 – Summer 2006

**College and University**

*Member*, Learning Spaces Committee, Fall 2010 – Spring 2011

*Advisor*, EGG Club, Fall 2008 – Spring 2010

*Member*, Student Retention Subcommittee, Spring 2009 – present

*Member*, MAST Project Search Committee, Spring 2009

**PRESENTATIONS****Conferences and Workshops**

*A Minimal Non-koszul  $A(\Gamma)$* , Special Session in Noncommutative Birational Geometry, Representations and Cluster Algebras, Joint Mathematics Meetings, Boston, Upcoming, 1/12

*Assessment Methods for Teaching the History of Mathematics Online*, Mathfest 2011, Lexington, 8/11

*Peer Feedback and Other Forms of Assessment in On-line Courses: What Worked, What Didn't*, MAA-NJ Section Meeting, Essex County College, 04/11

*Noncommutative Algebras Associated to Polynomials over Skew Fields*, Joint Mathematics Meetings, San Diego, 01/08

*Noncommutative Vieta's Theorem and Graph Associated Algebras*, Joint Mathematics Meetings, New Orleans, 01/07

*Graphs and Algebras*, MAA-NJ Section Meeting, Georgian Court University, 04/06

*Partially Commuting Algebras and Their Connections to  $Q_n$* , Lie Algebras, Vertex Operator Algebras, and Their Applications, North Carolina State University, 05/05

*Properties of Graph Associated Algebras*, Joint Mathematics Meetings, Atlanta, 1/05

*Graph Algebras*, IMR mini-conference, Rutgers University, 8/04

### **Seminars**

*A Minimal Non-koszul Example from a Class of Poset Algebras*, Noncommutative Algebra Seminar, Rutgers University, 9/11

*The Mathematics of Lewis Carol*, Math Department Seminar, WPU, 3/10

*A Distributive Lattice arising from the Exterior Algebra*, Noncommutative Algebra Seminar, Rutgers University, 10/06

*Some Koszul Algebras Arising from Graphs*, Math Department Seminar, WPU, 03/06

*A Lattice Based Proof that Exterior Algebras are Koszul*, Noncommutative Algebra Seminar, Rutgers University, 2/05

*The Algebra  $S_n$*  Noncommutative Algebra Seminar, Rutgers University, 4/04

*Some Examples of Koszul Algebras*, Noncommutative Algebra Seminar, Rutgers University, 03/04

*The Virasoro Algebra*, Graduate Student Algebra Seminar, Rutgers University, 03/00

*The Derivation Tower Problem, Everything We Know About Algebras When We Assume Nothing*,

*The Automorphism Tower Problem, How I Learned to Stop Worrying and Love  $\text{End}(V)$* , Graduate Student Pizza Seminars, Rutgers University, 98-05

### **Outreach**

*The Mechanics of Grid Motion*, Math Club Presentation, WPU, 11/10

*Fermat Numbers, Factorizations, and Theorems*, Math Fair, WPU, 11/10

*The Josephus Problem*, Math Club Presentation, WPU, 10/10

*Algorithms for Sharing Candy*, Math Club Presentation, WPU, 9/10

*Polygonal Numbers Minicourse*, Admitted Student Day, WPU, 05/09

*Triangular Numbers*, Math Fair, WPU, 11/08

*Perfect Numbers Minicourse*, Admitted Student Day, WPU, 04/08

*Perfect Numbers in Ancient Greece*, Math Fair, WPU, 11/07

*The Life and Work of Paul Erdos*, Math Club Presentation, WPU, 10/07

*Fermat's Fabulous Factorable Figures*, Math Fair, WPU, 11/06

*The Subset-Sum Problem (and how to use it to transmit information)*, Math Awareness Month, WPU, 4/06

### **Panels**

*What I Wish I Knew Before My First Year of Teaching*, NJ-NExT Meeting, Essex County College, Newark NJ, 4/11

*Future Math and Science Teachers Spring Information Event*, WPU, 4/09, 4/10, 4/11

*Future Math and Science Teachers Fall Information Event*, WPU, 10/09, 10/10

## TECHNOLOGY

### Software

D. Nacin, *HiLGA: Hilbert Series of Layered Graph Algebras*, for experimentation with cohomology of certain graph algebras

D. Nacin, *DIM: A Python Program Using Fractal Methods to test for Determinism in Music*

D. Nacin, J. Yeung, *PyG: A Graph Theory Package for Python*

### Skills

*Expert User*, Blackboard, Tegrity, Dia, LaTeX, Python, Sage, Java, C++

*Experienced User*, Mathematica, Maple, Matlab, Unix

## PROFESSIONAL SOCIETIES

SIGMAA on Research in Undergraduate Education, 2007 – present

SIGMAA on the History of Mathematics, 2007 – present

Pi Mu Epsilon National Honor Society, 2006 – present

Mathematical Association of America, 1998 – present

Latino Alumni Association of Rutgers University, 2005 – present

American Mathematical Society, 1997 – present

Mathematical Association of America, 1998 to present