

CURRICULUM VITAE OF DAVID RODRIGUEZ NACIN

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](http://www.wpunj.edu/cosh/departments/math/faculty.dot)

PROFESSIONAL EMPLOYMENT

- 2017–present *Professor*, Mathematics Department, William Paterson University (WPU), Wayne, NJ
- 2012–2017 *Associate Professor*, Mathematics Department, William Paterson University (WPU), Wayne, NJ
- 2005–2012 *Assistant Professor*, Mathematics Department, William Paterson University (WPU), Wayne, 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

PUBLICATIONS

Articles

- D. Nacin, *On a KenKen Problem from bit-player*, The College Mathematics Journal, Accepted for Publication
- D. Nacin, *Properties of a minimal non-Koszul $A(\Gamma)$* , Contemporary Mathematics, 592: 215-224, 2012.
- 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.

Puzzles

- D. Nacin, *Meandoku*, MAA Focus, Accepted for Publication
- D. Nacin, *Dihedroku*, The College Mathematics Journal, Accepted for Publication
- D. Nacin, *Quotientdoku and Remainderdoku*, Math Horizons, Accepted for Publication

D. Nacin, *MAA 101th Anniversary CMJ Puzzles*, The College Mathematics Journal, 47(4): 249,254,264,274, 2016.

D. Nacin, *MAA 100th Anniversary CMJ Puzzles*, The College Mathematics Journal, 46(4): 254,263,274,294, 2015.

D. Nacin, *Permutodoku Puzzle*, The College Mathematics Journal, 45(4):307, 2014.

D. Nacin, *Liedoku*, MAA Focus, 33(5):29, 2013.

Sequences

D. Nacin, *A204089 – A204092, A206947 – A206950, A206901, A206902, A208528, A208529, A208736 – A208743, A208900 – A208903, A209398 – A209400, A209408 – A209410, A209434 – A209439, A209490 – A209491, A282612-A282614, A282670, A282816-A282820, A283026-A283033, (58 Total)*, The Online Encyclopedia of Integer Sequences

Submitted

D. Nacin, *A Minimal Non-Koszul $A(\Gamma)$* , Communications in Algebra

In Preparation

D. Nacin, *Group Actions, Parity Graphs and Puzzles with Multiple Solutions*

D. Nacin, *Klein-four KenKen*

GRANTS, HONORS & AWARDS

Blunden Lecturer – The Atlantic Universities Mathematics, Statistics and Computer Science conference, Fall 2015

Park City Math Institute – Full Financial Support Awarded: Undergraduate Faculty Program in Moduli Spaces, Summer 2015

Park City Math Institute – Full Financial Support Awarded: Undergraduate Faculty Program in Materials Science, Summer 2014

William Paterson University – Sabbatical Award, Fall 2011 – Spring 2012

William Paterson University – ART Award, 2006, 2007, 2008, 2010, 2012 and 2014

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

TEACHING

University Courses

Instructor

William Paterson University, *History of Mathematics, Survey of Mathematics, Topology, Logic and Methods, Advanced Calculus, Modern Algebra, Calculus I, Calculus II, College Algebra, Precalculus, Algebra, Trigonometry and Functions, Quantitative Methods I, Real Analysis, Advanced Discrete, Linear Algebra, Applied Algebra*, 2005–present

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

Teaching Assistant

Rutgers University, *Pre-calculus, Calculus I, Calculus II*, 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

An Analogue of the $3x + 1$ Problem, Danielle Hughes

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

The RSA Algorithm, Michael Cemelli

Heartless Poker, Todd Vasy

Solitaire Mancala, Michelle Miller

Group Theory and the Rubix Cube, Kevin Bullen

Introduction to Algebraic Coding Theory, Michelle Ginart

So You Think You Know Algebra, Joseph DeGaetani

The Subprime Fibonacci Sequence, Vanessa Schiro

Fair Tournament Games, Christopher Icochea

Cyclotomic Coefficients, Kwang-Ho Lee

Polygon Preserving Group Actions, Sean Connolly

Bussesm Bullies and Bijections, Hubert Jorahua

Reading Courses

Number Theory, David Guerra and Philip Nelson

Advanced Cryptography, David Guerra

Mathematics of Music, Jennetta George

Topics in Algebra, Susan Wendling

Advanced Analysis of Transcendental Functions and Integral Calculus with Applications, Ysaac Mendoza
Braid Groups and Cryptography, Joseph DiGaetanti and Cherilyn Ann Connor

Courses Developed

Math 3110 Number Theory, Undergraduate
Math 5100 Mathematical Analysis, Upcoming Graduate Program
Math 5200 Topics in Linear Algebra, Upcoming Graduate Program
Math 5300 Probability Theory, Upcoming Graduate Program
Math 6200 Applied Algebra, Upcoming Graduate Program
Math 6240 Experimental Mathematics, Upcoming Graduate Program

SERVICE

Professional

Organizer and Presider – Recreational Mathematics Session, Upcoming MMA-NJ Conference, Spring 2018
Referee, The College Mathematics Journal, 2017 – present
Reviewer, Cambridge University Press, 2017 – present
Organizer and Presider – Recreational Mathematics Session, MMA-NJ Conference, Spring 2017
Organizer and Presider – Recreational Mathematics Session, MMA-NJ Conference, Spring 2016
Assistant Editor, “Online Encyclopedia of Integer Sequences”, 12/29/2013 - present
Member, Ph.D. Defense Committee, Rutgers University, Susan Durst, Spring 2013
Consultant, NJ-NEXt, Spring 2011 – present
Assistant 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
Referee, Mathematics Magazine, 2006 – present

Departmental

Member, Graduate Program Committee, WPU, Fall 2014 – present
Member, Math Department Council, WPU, Fall 2010 – Spring 2011, Fall 2012 – Spring 2016
Department Representative, AFT Local 1796, WPU, Fall 2012 – present
Advisor, Math Club and Activities, WPU, Fall 2008 – present
Coach, WPUNJ Problem Solving Group, Spring 2007 – present
Library Liason, WPU, Fall 2007 – present
AMS, MAA, & SIAM Representative, WPU, Fall 2007 – Summer 2010, Fall 2012 – present
Member, Retention and Tenure Committee, WPU, Fall 2010 – Spring 2011
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, Fall 2012 – Spring 2016

Advisor, EGG Club, Fall 2008 – Spring 2010

Member, Student Retention Subcommittee, Spring 2009 – Spring 2010

Member, MAST Project Search Committee, Spring 2009

PRESENTATIONS

Conferences

KenKen Puzzles Over Small Groups, MAA-NJ Section Meeting, The College of New Jersey, 3/26/2017

A New Type of Partition Puzzle, MAA-NJ Section Meeting, William Paterson, 4/2016

Recent Uniqueness Results for Complex Valued KenKen, MAA-NJ Section Meeting, Kean University, 11/2015

James Joseph Sylvester: On the 150th Anniversary of his Three Point Problem, The Atlantic Universities Mathematics, Statistics and Computer Science conference, Wolfsville, Canada, 10/2015

Liedoku for Abstract Algebra, Mathfest 2014, Portland, 8/2014

On a KenKen from Bitplayer, Gathering for Gardner: G4G11, Atlanta, 3/2014

A Complex Calcdoku Classification, Mathfest 2013, Hartford, 8/2013

On a complex valued Sudoku, MOVES Conference, Manhattan, 8/2013

Bit-Player Calcdoku, Joint Mathematics Meetings, San Diego, 1/2013

Unique KenKen Over the Complex Numbers, Mathfest 2012, Madison, 8/2012

A Minimal Non-koszul $A(\Gamma)$, Special Session in Noncommutative Birational Geometry, Representations and Cluster Algebras, Joint Mathematics Meetings, Boston, Upcoming, 1/2012

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

Peer Feedback and Other Forms of Assessment in On-line Courses: What Worked, What Didn't, MAA-NJ Section Meeting, Essex County College, 04/2011

Noncommutative Algebras Associated to Polynomials over Skew Fields, Joint Mathematics Meetings, San Diego, 01/2008

Noncommutative Vieta's Theorem and Graph Associated Algebras, Joint Mathematics Meetings, New Orleans, 01/2007

Graphs and Algebras, MAA-NJ Section Meeting, Georgian Court University, 04/2006

Partially Commuting Algebras and Their Connections to Q_n , Lie Algebras, Vertex Operator Algebras, and Their Applications, North Carolina State University, 05/2005

Properties of Graph Associated Algebras, Joint Mathematics Meetings, Atlanta, 1/2005

Seminars

A Complex KenKen Classification, Experimental Mathematics Seminar, Rutgers University, (12/8/2016)

KenKen Puzzles over Finite Abelian Groups, Math Department Seminar, WPU, (11/23/2016)

James Joseph Sylvester on the 150th Anniversary of his Four Point Problem, Math Department Seminar, WPU, 11/2015

Layered Graph Algorithms for Computational Non-commutative Algebra, Noncommutative Algebra Seminar, Rutgers University, 12/2011

Minimal Examples of Non-Koszul $A(\Gamma)$, Experimental Mathematics Seminar, Rutgers University, 12/2011

A Minimal Non-koszul Example from a Class of Poset Algebras, Noncommutative Algebra Seminar, Rutgers University, 9/2011

The Mathematics of Lewis Carol, Math Department Seminar, WPU, 3/2010
A Distributive Lattice arising from the Exterior Algebra, Noncommutative Algebra Seminar, Rutgers University, 10/2006
Some Koszul Algebras Arising from Graphs, Math Department Seminar, WPU, 03/2006
A Lattice Based Proof that Exterior Algebras are Koszul, Noncommutative Algebra Seminar, Rutgers University, 2/2005
The Algebra S_n Noncommutative Algebra Seminar, Rutgers University, 4/2004
Some Examples of Koszul Algebras, Noncommutative Algebra Seminar, Rutgers University, 03/2004
The Virasoro Algebra, Graduate Student Algebra Seminar, Rutgers University, 03/2000
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 150th Anniversary of Hadamard Matrices, Math Awareness Week, WPU, 4/26/2017
Puzzles Over Groups of Small Order, Explorations 2017, WPU, 4/5/2017
Online Resources for Math Majors, Math Major's Day, WPU, 3/30/2017
Weighing in on Gauss, Math Club Presentation, WPU, 2/27/2017
Fast Cube Root Computations, Math Club Presentation, WPU, 11/29/2016
Four Point Problems, Math Fair, WPU, 11/15
That Magic Square and a Number of Others, Math Awareness Week, WPU, 4/14
Triangular Numbers, Math Fair, WPU, 11/13
Steady States in a Division Game, Math Club Presentation, WPU, 10/13
Sumdoku and Number Puzzles, Math Fair, WPU, 11/12
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, *GroupPy: A Python Package for the Construction and Classification of KenKen Puzzles over Arbitrary Finite Groups.*

D. Nacin, *BOS: A Python Package for the Construction and Study of Sudoku Puzzles with Clues from Binary Operations of Adjacent Cells.*

D. Nacin, *DIPT: A Python Package for the Mathematical Analysis of Domination, Independence, and Tour Problems in Chess, and the Creation and Study of Chess Puzzles.*

D. Nacin, *PyTribus: A Python Package for Constructing Latin Square Puzzles.*

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*

Computer Skills

Expert User, Blackboard, Tegrity, Dia, LaTeX, Python, Sage, YeD, C++, Mathematica, Maple, Matlab

PROFESSIONAL SOCIETIES

ARTS-SIGMAA Special Interest Group on Mathematics and the Arts, 2007 – present

RUME-SIGMAA Special Interest Group on Research in Undergraduate Education, 2007 – present

HoM-SIGMAA Special Interest Group 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