Department of Mathematics & Computer Science Wabash College P.O. Box 352 Crawfordsville, Indiana 47933 (765) 361-6354

turnerw@wabash.edu
http://persweb.wabash.edu/facstaff/turnerw

EDUCATION

Ph.D., North Carolina State University, Computational Mathematics, 2002

Advisor: Erich Kaltofen

Dissertation: Black Box Linear Algebra with the LinBox Library

M.S., Iowa State University, Applied Mathematics, 1996

Advisor: Ralph Smith

Project: Time Discretization of Structural Problems

B.S., Iowa State University, Mathematics and Physics, 1994

Awarded with honors and distinction

Honors Project: Detection of Heavy Ion Recoils Following Pair Production

PROFESSIONAL POSITIONS

Permanent Positions

Chair, Department of Mathematics & Computer Science, Wabash College, 2012 – 2019
Associate Professor of Mathematics & Computer Science, Wabash College, 2008 –
Assistant Professor of Mathematics & Computer Science, Wabash College, 2004 – 2008
Byron K. Trippet Assistant Professor of Mathematics & Computer Science, Wabash College, 2002 – 2004
Teaching & Research Assistant, Department of Mathematics, North Carolina State University, 1996 – 2002
Teaching Assistant, Department of Mathematics Iowa State University, 1994 – 1996
Undergraduate Research Assistant, Department of Physics & Astronomy Iowa State University, 1991 – 1994

Temporary Positions

Programmer on the Maple e-Grading Project, North Carolina State University, Summer 2001 Graduate Student Intern, Boeing, Seattle, Washington, Summer 1998 Graduate Student Summer Intern, Wright-Patterson AFB, Ohio, Summer 1995

HONORS AND AWARDS

Eta Sigma Phi National Classics Honorary (2010)
Tenure, Wabash College (December 2007)
Exxon-Mobil Project NExT Fellow (2003 – 2004)
Project NExT-IN Fellow (2002 – 2003)
Lowell S. Winton and Nicholas J. Rose Research Scholarship (2002)
Outstanding Teaching Assistant (2000)
Aggie Ho Outstanding Teaching Award (1996)

Bachelor of Science with honors and distinction (1994) Mortar Board National Honor Society (1993) Phi Kappa Phi National Honor Society (1992) Golden Key National Honor Society (1992) Pi Mu Epsilon National Mathematics Honorary (1992) Iowa State University Academic Recognition Scholarship (1992) National Merit Scholarship (1992) David Collins Freshman Physics Scholarship (1991)

PUBLICATIONS

- [10] Mike Axtell and William Turner (2015). An Investigation Into the Effectiveness of Pre-Class Reading Questions. In Jacqueline M. Dewar and Curtis D. Bennett, editors, *Doing the Scholarship of Teaching and Learning in Mathematics*. The Mathematical Association of America.
- [9] Mike Axtell, J.D. Phillips, and William Turner (2007). Wabash Summer Institute in Algebra (WSIA). In Joseph A. Gallian, editor, Proceedings of the Conference on Promoting Undergraduate Research in Mathematics, pages 183–188. American Mathematical Society, Providence, Rhode Island. ISBN 978-0-8218-4321-5.
 - URL http://www.ams.org/employment/REUproceedings.html
- [8] M. Axtell and W. Turner (2007). Examining the Effectiveness of Reading Questions in Introductory College Mathematics Courses. In Joelle Fanghanel and Digby Warren, editors, *International Conference on the Scholarship of Teaching and Learning (2005 and 2006)*, pages 205–210. CEAP, City University, London. ISBN 978-0-9543742-3-5.
- [7] William J. Turner (2006). A Block Wiedemann Rank Algorithm. In Jean-Guillaume Dumas, editor, ISSAC 2006: Proceedings of the 2006 International Symposium on Symbolic and Algebraic Computation, pages 332-339. ACM Press, New York, New York. URL http://doi.acm.org/10.1145/1145768.1145822
- [6] William J. Turner (2005). Preconditioners for Singular Black Box Matrices. In Manuel Kauers, editor, ISSAC 2005: Proceedings of the 2005 International Symposium on Symbolic and Algebraic Computation, pages 332–339. ACM Press, New York, New York. URL http://doi.acm.org/10.1145/1073884.1073930
- [5] J.-G. Dumas, T. Gautier, M. Giesbrecht, P. Giorgi, B. Hovinen, E. Kaltofen, B. D. Saunders, W. J. Turner, and G. Villard (2002). LinBox: A Generic Library for Exact Linear Algebra. In Arjeh M. Cohen, Xiao-Shan Gao, and Nobuki Takayama, editors, *Proceedings of the International Congress of Mathematical Software (ICMS)*, *Beijing*. World Scientific, Singapore. URL http://persweb.wabash.edu/facstaff/turnerw/Publications/linbox-2002.pdf
- [4] William J. Turner (2002). Black Box Linear Algebra with the LinBox Library. Ph.D. thesis, North Carolina State University, Raleigh, North Carolina. URL http://www.lib.ncsu.edu/theses/available/etd-06122002-095342/unrestricted/etd.pdf
- [3] Li Chen, Wayne Eberly, Erich Kaltofen, B. David Saunders, William J. Turner, and Gilles Villard (2002). Efficient Matrix Preconditioners for Black Box Linear Algebra. *Linear Algoebra and its Applications*, 343-344:119-146. Special issue on *Infinite Systems of Linear Equations Finitely Specified*. URL http://persweb.wabash.edu/facstaff/turnerw/Publications/cekstv-laa-2002.pdf
- [2] Shangzou Gao, M. A. Jeffris, Min Liang, D. F. Pilkey, W. J. Turner, Yun Wang, and B. G. Fitzpatrick (1997). Wavelet Analysis of Vibration in Nondestructive Evaluation. In F. Reitich, J. S. Scroggs, and H. T. Tran, editors, 1996 Industrial Mathematics Modeling Workshop for Graduate Students, pages 78–85. Tech. Rep. CRSC-TR97-8, Center for Research in Scientific Computation. URL http://www.ncsu.edu/crsc/reports/ftp/crsc-tr97-8.ps.gz

[1] William J Turner (1996). Time Discretization of Structural Problems. Master's project, Iowa State University, Ames, Iowa.

URL http://persweb.wabash.edu/facstaff/turnerw/Publications/ms-1996.pdf

PRESENTATIONS

- [23] William Turner (19 September 2023). Can You Keep a Secret? A Brief Introduction to Cryptography. Department Colloquium, Department of Mathematics & Computer Science, Wabash College. URL http://persweb.wabash.edu/facstaff/turnerw/Presentations/colloquium-2023-handout.pdf
- [22] William J. Turner (3 October 2017). Combinatorics, Computer Science, and Permutation Patterns.

 Department Colloquium, Department of Mathematics & Computer Science, Wabash College.

 URL http://persweb.wabash.edu/facstaff/turnerw/Presentations/
 colloquium-2017-fall-handout.pdf
- [21] William Turner (18 August 2017). Permutation Patterns. Contributed Talk, 2017 Ides of August, Wabash College. URL http://persweb.wabash.edu/facstaff/turnerw/Presentations/ides-2017-handout.pdf
- [20] William J. Turner (18 April 2017). Linear Algebra on a Computer: An Introduction to Black Box Methods. Department Colloquium, Department of Mathematics & Computer Science, Wabash College. URL http://persweb.wabash.edu/facstaff/turnerw/Presentations/colloquium-2017-handout. pdf
- [19] William Turner (4 February 2014). Telling Secrets: Secret Writing Through the Ages. Department Colloquium, Department of Mathematics & Computer Science, Wabash College. URL http://persweb.wabash.edu/facstaff/turnerw/Presentations/colloquium-2014-handout. pdf
- [18] William J. Turner (21 September 2010). Exact Arithmetic on a Computer: Symbolic Computation and Computer Algerba. Department Colloquium, Department of Mathematics & Computer Science, Wabash College. URL http://persweb.wabash.edu/facstaff/turnerw/Presentations/colloquium-2010-handout. pdf
- [17] William Turner (3 May 2010). Exact Arithmetic on a Computer: Symbolic Computation and Computer Algerba. Invited Talk, Department Colloquium, Valparaiso University.

 URL http://persweb.wabash.edu/facstaff/turnerw/Presentations/valpo-2010-handout.pdf
- [16] William Turner (21 August 2009). Computational Science at Wabash College. Contributed Talk, 2009 Ides of August, Wabash College. URL http://persweb.wabash.edu/facstaff/turnerw/Presentations/ides-2009-handout.pdf
- [15] William J. Turner (6 February 2007). Linear Algebra on a Computer: An Introduction to Black Box Methods. Department Colloquium, Department of Mathematics & Computer Science, Wabash College. URL http://persweb.wabash.edu/facstaff/turnerw/Presentations/colloquium-2007-handout.pdf
- [14] William Turner (18 August 2006). WSIA: Wabash Summer Institute in Algebra. Contributed Talk, 2006 Ides of August, Wabash College. URL http://persweb.wabash.edu/facstaff/turnerw/Presentations/ides-2006-handout.pdf
- [13] William J. Turner (11 July 2006). A Block Wiedemann Rank Algorithm. Contributed Talk, 2006 International Symposium on Symbolic and Algebraic Computation. URL http://persweb.wabash.edu/facstaff/turnerw/Presentations/issac-2006.pdf

[12] Mike Axtell and William Turner (18 May 2006). Examining the Effectiveness of Reading Questions in Introductory University Mathematics Courses. Contributed Talk, London SoTL 6th Annual International Conference. URL http://persweb.wabash.edu/facstaff/turnerw/Presentations/sotl-2006.pdf

- [11] William J. Turner (27 July 2005). Preconditioners for Singular Black Box Matrices. Contributed Talk, 2005 International Symposium on Symbolic and Algebraic Computation.
 - URL http://persweb.wabash.edu/facstaff/turnerw/Presentations/issac-2005.pdf
- [10] William J. Turner (19 October 2004). Can You Hear Me Know? An Introduction to Coding Theory. Department Colloquium, Department of Mathematics & Computer Science, Wabash College. URL http://persweb.wabash.edu/facstaff/turnerw/Presentations/colloquium-2004-handout.pdf
- [9] William J. Turner (12 March 2004). Black Box Linear Algebra: An Introduction to Wiedemann's Approach. Invited Talk, Department Seminar, Center For Computing Sciences, Bowie, Maryland. URL http://persweb.wabash.edu/facstaff/turnerw/Presentations/ccs-2004.pdf
- [8] William J. Turner (12 November 2003). Black Box Linear Algebra: An Introduction to Wiedemann's Approach. Invited Talk, Department Seminar, Department of Mathematics, Rose-Hulman Institute of Technolog.
 - URL http://persweb.wabash.edu/facstaff/turnerw/Presentations/rhit-2003.pdf
- [7] Jean-Guillaume-Dumas, William J. Turner, and Zhendong Wan (18 May 2002). Exact Solution to Large Sparse Integer Linear System. Poster Presentation, East Coast Computer Algebra Day (ECCAD), LaGuardia Community College of The City University of New York.
- [6] William J. Turner (6 March 2002). Black Box Linear Algebra. Graduate Algebra Seminar, Department of Mathematics, North Carolina State University.

 URL http://persweb.wabash.edu/facstaff/turnerw/Presentations/gras-2002.pdf
- [5] William J. Turner (21 Septebmer 2001). Black Box Linear Algebra with the LinBox Library. Graduate Algebra Seminar, Department of Mathematics, North Carolina State University. URL http://persweb.wabash.edu/facstaff/turnerw/Presentations/gras-2001.pdf
- [4] William J. Turner (23 25 July 2001). Efficient Matrix Preconditioners for Black Box Linear Algebra. Poster Presentation, International Symposium on Symbolic and Algebraic Computation (ISSAC), London, Ontario, Canada.
 - URL http://persweb.wabash.edu/facstaff/turnerw/Presentations/issac-2001.pdf
- [3] William J. Turner (5 May 2001). A Randomized Baby Steps/Giant Steps Implementation of Wiedemann's Determinant Algorith. Poster Presentation, East Coast Computer Algebra Day (ECCAD), Florida State University.
 - URL http://persweb.wabash.edu/facstaff/turnerw/Presentations/eccad-2001.pdf
- [2] William J. Turner (23 June 2000). The Generic Field and Black Box Matrix Models in the LinBox Library. Presentation at LinBox Meeting, Institut d'Informatique et de Mathematiques Appliqueés de Grenoble (IMAG), France.
 - ${\rm URL\ http://persweb.wabash.edu/facstaff/turnerw/Presentations/grenoble-2000.pdf}$
- [1] William J. Turner (13 May 2000). The Generic Field and Black Box Matrix Models in the LinBox Library. Poster Presentation, East Coast Computer Algebra Day (ECCAD), University of Western Ontario.
 - URL http://persweb.wabash.edu/facstaff/turnerw/Presentations/eccad-2000.pdf

GRANTS

NSF DMS-0453387: REU Site: Wabash Summer Institute of Algebra

SERVICE

Service to Profession

Professional Societies

Indiana Section of the MAA Distinguished Teaching Award Selection Committee (2019 - 2022)

Indiana Section of the MAA Past Chair (2020 – 2021)

Indiana Section of the MAA Chair (2019 – 2020)

Indiana Section of the MAA Vice-Chair (2018 - 2019)

2016 - 17 Project NExT Consultant

2011 - 12 Project NExT Consultant

2009 – 10 Project NExT Consultant

2008 – 9 Project NExT Consultant

Indiana Section of the MAA Newsletter Editor (2008 – 2018)

ACM SIGCSE Information Co-Director (2007 –)

ACM SIGSAM Advisory Board (2005 – 2008)

Project NExT-Indiana Co-Organizer (2004 – 2005)

ACM SIGSAM Information Director (2003 – 2014)

External Reviewer/Referee

John Wiley & Sons, Inc., Publishers

American Journal of Undergraduate Research

College Mathematics Journal "Classroom Capsule"

Journal of Online Mathematics and its Applications

Journal of Symbolic Computation

Loci — online journal of MathDL and MAA

PRIMUS: Problems, Resources, and Issues in Mathematics Undergraduate Studies

Transactions on Mathematical Software

International Symposium on Symbolic and Algebraic Computation — 2000, 2001, 2004, 2007, 2010, 2016 Consortium for Computing Sciences in Colleges

Eastern Conference — 2004, 2009

Midwest Conference — 2002, 2003, 2011, 2012, 2016

Northeast Conference — 2009

 $\begin{array}{l} {\rm Midstates\ Conference\ for\ Undergraduate\ Research\ in\ Computer\ Science\ and\ Mathematics\ --2004}\\ {\rm SIGCSE\ Symposium\ --2004,\ 2005,\ 2006,\ 2007,\ 2008,\ 2009,\ 2010,\ 2011,\ 2012,\ 2013,\ 2014,\ 2015,\ 2014,\ 2015,\ 2016,\ 2017}\\ {\rm ITiCSE\ --2005,\ 2005,\ 2006,\ 2007,\ 2009,\ 2010,\ 2011,\ 2012,\ 2013,\ 2014,\ 2015,\ 2016,\ 2017}\\ \end{array}$

Conference Organizing Committee

Publicity Chair, 2012 International Symposium on Symbolic and Algebraic Computation Poster Committee Member, 2005 International Symposium on Symbolic and Algebraic Computation Web Chair, 2003 International Symposium on Symbolic and Algebraic Computation Web Co-chair, 2001 International Symposium on Symbolic and Algebraic Computation Automated poster submission system, 1999 East Coast Computer Algebra Day

Other

Session Chair, Spring 2009 meeting of the Indiana Section of the Mathematical Association of America (INMAA)

Session Chair, 2006 International Symposium on Symbolic and Algebraic Computation National Study of Liberal Arts Education, Institutional Context Study

Center of Inquiry in the Liberal Arts, Wabash College

Judge, 2004 Joint Mathematics Meetings Undergraduate Student Poster Session

Service to Institution

Ad hoc Fall Calendar Review Committee (2018) Faculty Parliamentarian (2017 – 2019) Ad hoc Spring Calendar Review Committee (2017 – 2018) Consultant to the Academic Honesty Appeals Panel (2017) Prelaw Committee (2016 – 2022) Faculty Advisor, Delta Omicron Chapter, Alpha Phi Omega (2015 – 2023) : Advisory Board Chair (2015 - 2023) Institutional Review Board (2014 – 2015, 2016 – 2020, 2022 –) Ad hoc COACHE Study Response Team (2013 – 2015) Committee on Committees (2013 - 2016, 2019 - 2022)Scientific Integrity Committee (2011 – 2014, 2015 – 2019) Integrated Mareketing Committee (2011 – 2013) Academic Honesty Appeals Panel (2011 – 2014, 2023 –) Chair (2013 - 2014)McLain-McTurnan-Arnold Research Scholar Committee (2009 – 2012) Chair (2010 - 2012)Rogge Fund Committee (2009 – 2012) Outside Faculty Member, Theodore Bedrick Fellow Search (2011) Cultures & Traditions Co-Chair (2010 – 2011) Academic Policy Committee (2005 - 2006, 2009 - 2011, 2019 - 2020) APC Agenda Committee (2010 – 2011) Curriculum Appeals Committee (2005 – 2006, 2009 – 2010) Cultures & Traditions Steering Committee (2009 – 2011) Graduate Fellowships Committee (2007 – 2008) Outside Faculty Member, Visiting Philosophy Search (2007) Teaching and Learning Committee (2006 – 2008, 2022 –): Chair (2007 - 2008)Outside Faculty Member, Visiting Religion Search (2006) Norman E. Treves Science Award Committee (2005 – 2008) Faculty Admissions Committee (2004 – 2006) Technology Advisory Committee (2004 – 2007): Chair (2005 - 2007)Cultures & Traditions, European Revolution Module Subcommittee (2004) Cultures & Traditions, Greek Module Revision Subcommittee (2004) Outside Faculty Member, Tenure-Track German Search (2004) Division I Speakers Committee (2003 – 2004) Freshman Advisor (2003, 2005) International Merit Scholarship Committee (2003 – 2004) Faculty Advisor, Delta Omicron Chapter, Alpha Phi Omega (2002 – 2007): Advisory Board Chair (2004, 2007)

Service to Department

Department Chair (2012 - 2019)Department Colloquium (2011 - 2012, 2019 - 2022)

Science and Math Facilities Committee (2002 – 2004)

Course Scheduling (2009 – 2019)

MAA Liaison (2008 –)

Written Comprehensive Examinations (2006 – 2008, 2009 – 2010)

Computer Science Written Comprehensive Examinations (2020 –)

J. Crawford Polley Prize Coordinator (2006 - 2008, 2021 - 2023)

George E. Carscallen Prize Coordinator (2005 – 2008)

Technical Report Series (2004 – 2006)

Assessment (2003 – 2008)

Calculus Course Coordinator (2003 - 2005)

Email List Administrator (2003 –)

Web Pages (2003 – 2012)

Mathematics Competitions (2002 – 2004)

PROFESSIONAL SOCIETIES

American Mathematical Society (AMS)

Association for Computing Machinery (ACM)

ACM Special Interest Group on Computer Science Education (ACM SIGCSE)

ACM Special Interest Group on Symbolic and Algebraic Manipulation (ACM SIGSAM)

Mathematical Association of America (MAA)

UNDERGRADUATE RESEARCH STUDENTS

Devin Chalmers, Wabash College '07 (Summer 2004)

Damie Green, University of Texas of the Permian Basin '08 (WSIA 2007)

Albert Li, Wabash College '16 (Summer 2014)

Feng Mai, Wabash College '08 (WSIA 2006)

Alan Patton, Wabash College '04 (Summer 2003)

Matthew A. Revna, Case Western Reserve University '07 (WSIA 2006)

Zachary J. Roth, Hastings College '07 (WSIA 2006)

Amanda J Watkins, University of Evansville '08 (WSIA 2006)

Austin Somers, Wabash College '07 (Summer 2004)

COURSES TAUGHT

Wabash College

C&T 201: Cultures & Traditions I — Fall 2003, Fall 2006, Fall 2010

C&T 202: Cultures & Traditions II — Spring 2011

 ${\it CSC~101:~Introduction~to~Computer~Science --} \ {\it Fall~2005,~Fall~2006,~Fall~2007,~Fall~2009,~Fall~2010,~Fall~2013,~Fall~2014,~Spring~2018,~Fall~2023}$

CSC 111: Introduction to Computer Science — Fall 2002 (co-taught), Spring 2012, Fall 2018, Fall 2020, Fall 2021, Fall 2022

CSC 112: Advanced Programming — Fall 2003, Fall 2004, Fall 2011

CSC 121: Introduction to Additional Programming Languages

C++ — Fall 2013, Fall 2015, Fall 2017, Fall 2019

Haskell — Fall 2013, Fall 2015, Fall 2017, Fall 2019

Python — Fall 2014, Fall 2016, Fall 2018

Scheme — Fall 2014, Fall 2016

R — Fall 2018

CSC 171: Special Topics in Computer Science

Programming in Python — Fall 2012

Programming in Scheme — Fall 2012

CSC 211: Introduction to Data Structures — Spring 2003, Spring 2004, Spring 2010, Spring 2011, Spring 2012, Spring 2013, Spring 2014, Spring 2015, Spring 2018

CSC 242: Programming Languages — Spring 2021

CSC 271: Special Topics in Computer Science

Mobile Device Programming — Spring 2013, Spring 2015, Spring 2017 Database Design — Fall 2013, Fall 2016

CSC 311: Introduction to Machine Organization — Fall 2017

CSC 321: Programming Languages — Spring 2011, Spring 2012 (Independent Study)

CSC 331: Analysis of Algorithms — Spring 2012 (Independent Study)

CSC 338: Topics in Computational Mathematics

Computer Algebra — Fall 2009, Fall 2011, Fall 2015, Fall 2019

CSC 341: Theory of Computing — Spring 2007

FRC Freshman Colloquium (Enduring Questions) — Spring 2017

FRT: Freshman Tutorial — Fall 2005 (Man and Machine), Fall 2023 (Can You Keep a Secret?)

MAT 010: Pre-Calculus with Introduction to Calculus — Fall 2019, Fall 2020, Fall 2021

MAT 106: Topics in Contemporary Mathematics

Pure Mathematics — Spring 2005, Spring 2006, Spring 2007, Spring 2008, Spring 2010, Spring 2014 Number Theory — Fall 2011

Voting & Electoral Systems — Spring 2020, Spring 2021

MAT 108: Introduction to Discrete Structures — Fall 2009, Fall 2012, Fall 2014, Spring 2017 (Independent Study)

MAT 110: Calculus I with Pre-Calculus Review — Spring 2020, Spring 2021, Spring 2022

MAT 111: $Calculus\ I$ — Fall 2002, Spring 2003, Fall 2003, Fall 2004, Spring 2008, Fall 2010, Fall 2012, Fall 2016, Fall 2022

MAT 112: Calculus II — Spring 2004, Spring 2010

MAT 219: Combinatorics — Spring 2006, Spring 2012, Spring 2014, Spring 2018, Spring 2020

MAT 221: Geometry — Spring 2021

MAT 222: Theory of Numbers — Fall 2005, Fall 2006, Fall 2007, Spring 2013, Spring 2015

MAT 223: Elementary Linear Algebra — Fall 2002, Spring 2006, Fall 2007

MAT 225: Multivariable Calculus — Fall 2015, Fall 2020, Fall 2021, Fall 2022

MAT 226: Operations Research — Spring 2003, Spring 2005, Spring 2007, Spring 2017

MAT 314: Modeling with Differential Equations — Fall 2004

MAT 319: Combinatorics — Spring 2004

MAT 323: Topics in Linear Algebra — Fall 2016

MAT 331: Abstract Algebra I — Spring 2005, Spring 2008, Spring 2022

MAT 338: Topics in Computational Mathematics

Computer Algebra — Fall 2009, Fall 2011, Fall 2015, Fall 2017, Fall 2019

PSC 220: Mathematics of Voting & Electoral Systems — Spring 2020, Spring 2021

North Carolina State University

MA 111: Precalculus Algebra and Trigonometry — Fall 1996 (Teaching assistant)

MA 141: Analytic Geometry and Calculus I — Fall 1997, Fall 1998, Spring 1999, and Fall 1999

MA 305: Elementary Linear Algebra — Spring 2000 (Internet course; teaching assistant)

Iowa State University

Math 141/2: Trigonometry and Analytic Geometry — Fall 1994 Math 160: Calculus for Economics and Biology Majors — Spring 1995, Fall 1995, and Spring 1996