CURRICULUM VITAE JENNIE D'AMBROISE

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SUNY Old Westbury
Department of Mathematics,
Computer & Information Systems
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EDUCATION Ph.D. Mathematics 2010, University of Massachusetts at Amherst

Dissertation: Generalized EMP and non-Linear Schrödinger-type reformulations

of some scalar field cosmological models,

Advisor: Floyd L. Williams

B.Sc. Mathematics 2003, University of Massachusetts at Amherst

Honors Thesis: Cryptographic Methods, Graduation Honors: Magna Cum Laude

Advisor: Siman Wong

EXPERIENCE 2015 - now Assistant Professor, SUNY Old Westbury

2013 - 2015 Visiting Assistant Professor, Amherst College

2011 - 2013 Visiting Assistant Professor, Bard College

2010 - 2011 Assistant Professor, University of Minnesota at Morris (UMM)

2008 - 2010 Lecturer, University of Massachusetts at Amherst (UMass)

2003 - 2008 Teaching Associate, University of Massachusetts at Amherst

RESEARCH Nonlinear evolution equations, PDEs, Mathematical Physics, Numerical and exact methods,

INTERESTS Mathematical aspects of quantum theories, \mathcal{PT} -symmetric systems

PEER-REVIEWED PUBLICATIONS (* WITH UNDERGRADUATE STUDENT)

- **17.** J.D'Ambroise, P.G. Kevrekidis, and P. Schmelcher, *Bright solitary waves on a torus: existence, stability and dynamics for the nonlinear Schrödinger model*, in progress.
- **16.** J. D'Ambroise and P.G. Kevrekidis, *2D solutions of the hyperbolic discrete nonlinear Schrödinger equation*, submitted, arXiv:nlin/1810.00712.
- **15.** J. D'Ambroise, D. J. Frantzeskakis, and P. G. Kevrekidis, *Travelling dark-bright solitons in a reduced spin-orbit coupled system: application to BEC*, Romanian Rep. in Phys. **70** (2018), 503, arXiv:nlin/1710.03270.
- **14.** T. M. Bersano, V. Gokhroo, M. A. Khamehchi, J. D'Ambroise, D. J. Frantzeskakis, P. Engels, and P. G. Kevrekidis, *Three-Component Soliton States in Spinor* F=1 *Bose-Einstein Condensates*, Phys. Rev. Lett. **120** (2018), 063202, arXiv:cond-mat/1705.08130.
- **13.** J. D'Ambroise and F. L. Williams, *Elliptic function solutions in Jackiw-Teitelboim dilaton gravity*, Adv. Math. Phys. (2017), 2154784, arXiv:nlin/1705.08585.
- **12.** J. D'Ambroise and P. G. Kevrekidis, *Existence, Stability & Dynamics of Nonlinear Modes in a 2d Partially PT Symmetric Potential*, Applied Sciences **7** No. 3, (2017), 223, arXiv:nlin/1701.00553.
- 11. J. D'Ambroise, M. Salerno, P. G. Kevrekidis, and F.Kh. Abdullaev, *Multidimensional discrete compactons in nonlinear Schrödinger lattices with strong nonlinearity management*, Phys. Rev. A **92** (2015), 053621, arXiv:nlin/1508.03008.
- **10.*** J. D'Ambroise, P. G. Kevrekidis, and D. Law, *Asymmetric wave propagation through saturable nonlinear oligomers*, Photonics **1** No. 4 (2015), 390, arXiv:nlin/1412.4856.
- **9.** J. D'Ambroise, P. G. Keverekidis and B. A. Malomed, *Staggered PT-symmetric ladders with cubic nonlinearity*, Phys. Rev. E **91** (2015), 033207, arXiv:nlin/1409.7413.

- **8.** J. D'Ambroise, S. Lepri, B. A. Malomed and P.G. Keverekidis, *PT-symmetric ladders with a scattering core*, Phys. Lett. A **378** No. 38-39 (2014), 2824, arXiv:nlin/1407.1086.
- 7. J. D'Ambroise, P. G. Kevrekidis and B. A. Malomed, *Quasi-energies, parametric resonances, and stability limits in ac-driven PT-symmetric systems*, Chaos **24** (2014), 023136, arXiv:nlin/1308.3245.
- **6.** J. D'Ambroise, P. G. Kevrekidis and S. Lepri, *Eigenstates and instabilities of chains with embedded defects*, Chaos, **23** No. 2 (2013), p 023109 023109-10, arXiv:nlin/1211.5707.
- 5. J. D'Ambroise, P. G. Kevrekidis and S. Lepri, *Asymmetric wave propagation through nonlinear PT-symmetric oligomers*, Journal of Physics A: Mathematical and Theoretical **45** No. 44 (2012), 444012, arXiv:nlin/1202.4483.
- **4.** J. D'Ambroise and F. L. Williams, *Parametric solution of a certain nonlinear differential equations in cosmology*, Journal of Nonlinear Mathematical Physics, **18** No. 2 (2011), 269-278 arXiv:gr-qc/1202.4422.
- **3.** J. D'Ambroise and F. L. Williams, *A dynamic correspondence between FRLW cosmology with cosmological constant and Bose-Einstein condensates*, Journal of Mathematical Physics, **51** No. 6 (2010), 062501-062511, arXiv:math-ph/1007.4237.
- **2.** J. D'Ambroise, *A Schrödinger formulation of Bianchi I scalar field cosmology*, International Journal of Pure and Applied Mathematics, **42** No. 3 (2008), 405-410, arXiv:hep-th/0711.3916.
- **1.** J. D'Ambroise and F. L. Williams, *A nonlinear Schrödinger type formulation of FRLW scalar field cosmology,* International Journal of Pure and Applied Mathematics, **34** No. 1 (2007), 117-126, arXiv:hep-th/0609125.

CONFERENCE PROCEEDINGS

- 3. J. D'Ambroise and F.L. Williams, *Parametric solution of certain nonlinear differential equations in cosmology II* Proc. of Sci. (2012), Invited Contribution for 7th International Conference on Math. Methods in Physics (ICMP), arXiv:gr-qc/1208.4812.
- **2.** J. D'Ambroise, *EMP reformulations of Einstein's equations as an application of a property of suitable second order differential equations*, conference proceedings for Lie Theory and its Applications to Physics, Varna Bulgaria, June 2009.
- 1. J. D'Ambroise, *Applications of elliptic and theta functions to Friedman-Robertson-Lemaître-Walker cosmology with cosmological constant*, A Window Into Zeta and Modular Physics, Cambridge University Press (2010) arXiv:gr-qc/0908.2481.

UNPUBLISHED PAPERS

- **2.*** F. Kh. Abdullaev, J. D'Ambroise, P. G. Kevrekidis and Y. N. Truong Vu, *Some case example exact solutions for quadratically nonlinear optical media with PT-symmetric potentials.*, arXiv:nlin/1501.00519.
- **1.** J. D'Ambroise, *EMP and linear Schrödinger models for a conformally Bianchi I cosmology*, arXiv:hep-th/0809.4817.

TEACHING AWARDS

- May 2010 · Department of Mathematics and Statistics Teaching Award, UMass Amherst
- Apr 2009 · Residential First Year Experience Student Choice Award, UMass Amherst
- Apr 2007 · University of Massachusetts Distinguished Teaching Award (among two TAs university-wide)

FUNDS

- Spring 2016 · Faculty Development Grant, SUNY Old Westbury (for ipad for video creation for blended course)
- Spring 2014 · Project in Innovative Curriculum and Teaching (PICT) Grant, Amherst College
- 2012 2014 · AMS-Simons Travel Grant
- Jul 2012 · AWM Workshop Speaker, at SIAM Annual Meeting AWM Workshop, Minneapolis, MN
- Jan 2009 · AWM Workshop Grant, Joint Mathematics Meetings, Washington D.C.
- Aug 2007 Graduate Student Travel Grant, UMass Univ. and UMass Dept of Math & Stats
- May 2007 · Summer Research Assistantship, UMass Dept of Math & Stats

ONLINE FACULTY DEVELOPMENT COURSES

- Sum 2018 · Completed: Collab. Online Internat. Learning (COIL) Orientation, by SUNY COIL Center
- Sum 2017 · Completed: Grants and Proposals, by The Institute for Writing and Learning
- Spring 2016 · Completed with Distinction: Teach. & Learn. Cert. for New Faculty, by SUNY Ctr. for Prof. Dev. See online portfolio: https://sites.google.com/site/jenniedambroiseeportfolio
- Spring 2016 · Completed with Distinction: Quality by Design, by SUNY Ctr. for Prof. Dev.
- S16-F16 · Completed: Online, Hybrid, and Blended Training, by SUNY Old Westbury with C. Shehigian

UNDERGRADUATE PROJECT SUPERVISION

- Independent Study
 - F18 · Efrat Shani, Differential Geometry Reading Course
- CSTEP Internship Supervisor: Notesheet Project
 - Wint 19 · Supervised 1 student, Asad Imam, making Differential Equations guided notesheets
 - F18 · Supervised 2 students, Asad Imam and Parwinder Kaur, making Pre-Calculus & Calc II notesheets
 - Sum 18 · Supervised 2 students, Asad Imam and Jacob Jones, making Calculus I-II guided notesheets
- Senior Project Primary Advisor
 - F12 S13 · Emily Carlson, A Model of Charge Transport in a Dye-Sensitized Solar Cell, at Bard College
 - F11 S12 · Jeannette Benham, Auditory Perception in Flatland: The Physical Applicability of a Two-Dimensional Cochlear Model, at Bard College
- Senior Project Non-Primary Advisor
 - F12 · Board Member for Grant Anderson, at the Bard College Prison Initiative
 - F12 · Board Member for John Aufioros, at the Bard College Prison Initiative
 - S11 · Secondary Advisor for Nick Grieme, Finite-Element Method, at UMM

TEACHING EXPERIENCE († videos, ★ MyMathLab, ★ Mathematica, △ WebWork, ○ WebAssign, ⊙ OER Open Ed. Res.)

• SUNY Old Westbury

S19	$\triangle \dagger \odot$ Differential Equations	⋆† Integral Calculus	⋆† Differential Calculus
F18	⋆† Differential Calculus	⋆† Integral Calculus	∘ † ⊙ Multivariable Calculus
S18	† PreCalculus	† Integral Calculus	△ Differential Equations
F17	⋆† Differential Calculus	† PreCalculus	∘† Business PreCalculus
S17	 Differential Equations 	⋆† Integral Calculus	
F16	⋆ PreCalculus	⋆ Differential Calculus	⋆† Integral Calculus
S16	· Differential Equations	⋆ Integral Calculus	

★ Differential Calculus

* Integral Calculus

• Amherst College

F15

\$15 ** Linear Algebra, 2 sections

* PreCalculus

• Bard College

S13	* ODE/PDE	* Integral Calculus, 2 sections
F12	· Linear Algebra with ODE	★ Integral Calculus, 2 sections
S12	· Complex Analysis	★ Integral Calculus, 2 sections
F11	. Ordinary Differential Equations	+ Differential Calculus 2 section

- UMM
 - \$11 ★ Multivariable Calculus
- ** Integral Calculus
- **★* Differential Calculus**

F10 · Real Analysis

** Differential Calculus

UMass

Section Lecturer

- S10 \triangle Linear Algebra, 2 sections
- F09 \(\triangle \text{Multivariate Calculus for Sci/Eng, 2 sections} \)
- o Integral Calculus for Sci/Eng, 2 sections of Sci/Eng, 2 sections of Sci/Eng, 2 sections of Sci/Eng, 2 sections
- F08 o Differential Calculus for Sci/Eng, 2 sections
- S08 · Honors Integral Calculus
- S07 · Multivariate Calculus for Sci/Eng
- F06 o Integral Calculus for Sci/Eng
- Su06 · Integral Calculus
- F05 · Basic Math Skills for the Modern World
- S05 · Differential Calculus for Sci/Eng
- F04 · Basic Math Skills for the Modern World
- F03 · Precalculus Trigonometry
- Qualifying Exam Review Instructor
- Su06 · Real Analysis · Geometry
- Recitation Instructor and Grader
- S06 and F07 · Ordinary Differential Equations
- Grader
- S04 · Complex Analysis
- · Real Analysis
- F03 · Abstract Algebra II

PROFESSIONAL SERVICE

- 2019-now · Reviewer for Applied Sciences, An Open Access Journal from MDPI (~1/yr)
- May 2019 · Session Chair, DS19: SIAM Conf. on App. of Dynamical Systems, Snowbird, UT
- 2018-now · Reviewer for Chaos: An Interdisciplinary Journal of Nonlinear Science (~3/yr)
- 2018-now · Reviewer for Wave Motion: An Internat. Jour. Reporting Research on Wave Phenomena (~1/yr)
- 2017-now · Reviewer for Bulletin of the London Mathematical Society (~1/yr)
- 2016-now · Reviewer for Physics Letters A (~1/yr)
- 2012-now · Reviewer for Communications in Nonlinear Science and Numerical Simulation (~1/yr)
- 2010-now · Reviewer for Mathematical Reviews/MathSciNet (~1/yr)
- Jun 2011 · Session Chair, LT9: Lie Theory and its App. to Phys., Varna, Bulgaria

ON CAMPUS SERVICE

- SUNY Old Westbury CAMPUS-WIDE
 - F18-F18 · Faculty Senate Vice Chair
 - F16-S18 · Faculty Senate Secretary & Treasurer
 - F18-S19 · Senate website: archiving project
 - F16-S18 · Faculty Judicial Committee
 - S17 · Committee for Shuttle Improvements: Chair
 - recurring · Academic Standing Committee: Jun 2016, Jan 2016, Aug 2016, Jan 2017, Jun 2017, Aug 2017

• SUNY Old Westbury - DEPARTMENTAL

F16-F18 · Math & CIS Faculty Senate Senator

F17-now · OW Representative at Delegate Assembly for the Metro NY Section of the MAA

S16-now · CSTEP Coordinator for Math/CIS Dept.

S16-now · Academic Advising

F17-S18 · Content Coordinator for Smart Scholars Program

Sum 2018 · Search Committee (Asst. Dir. MLC)

S17 · Helped to draft Math Learning Center improvements recommendations

recurring · Open House representative for Mathematics: Apr 2016, Nov 2016

Mar 2016 · Presentation: Careers/Pathways for Math Majors, sponsored by CSTEP

See website: www.jdambroise.com/mathcareers

• Amherst College

Fall 2013 · Putnam Problems Practice Sessions

Fall 2013 · Graduate School Info Session

• Bard College

Aug 2011 · Graduate School Panel at Undergrad Workshop

UMM

F10-S11 · Calculus Tutoring Center Math Liason

UMass

F08-S10 · Calculus Tutoring Center, organizing and scheduling

F08-S10 · Mathematical Physics Seminar Organizer

F08, F09 · Distinguished Teaching Award Selection Committee

Jan 2008 · Volunteer renovation of Mathematics undergraduate lounge

S07, S08 · Workshop at Campus TA Orientation: Making the Most of Your TA Experience Workshop

Sep 2008 $\,\cdot\,\,$ Student welcome and discussion, Mathematics and Statistics TA Orientation

May 2008 · Dinner and discussion, Women and Minorities in Physics mentoring event

PROFESSIONAL ORGANIZATIONS

• SIAM: Society for Industrial and Applied Mathematics

• AWM: Association for Women in Mathematics

SEMINARS & WORKSHOPS

• Nov 2018 · Prep Videos for Math Class (short discussion intro/ prompt)

Videos and New Media in the Classroom, SUNY Old Westbury Faculty Roundtable

• F13-S15 · Nonlinear Waves Seminar, Umass Amherst

• Jun 2009 · Summer School on Nuclear and Particle Astrophysics:

Connecting Quarks with the Cosmos, Univ Washington, Seattle WA

• Jun 2009 · Graduate Summer School: Geometry of Quantum Fields and Strings, UPenn

Jun 2008 · MSRI Workshop: A Window Into Zeta and Modular Physics, UC Berkeley

Jul 2009 · Career Mentoring for Women in Mathematics, Wheaton College, Norton, MA

• F08 - S10 · Organizer of Mathematical Physics Seminar

• F07 - S08 · Mathematical Physics and General Relativity Seminar

• F06 - S07 · General Relativity and Cosmology Seminar

• S06 - S10 · Physics Departmental Colloquium

TALKS

- 2D solutions of the hyperbolic discrete nonlinear Schrödinger equation
 - May 2019. DS19: SIAM Conf. on App. of Dynamical Systems, Snowbird, UT
 - Aug 2018 · Internat. Conf. on Nonlin. Phenomena in BEC & Optical Systems, Tashkent, Uzbekistan
- Roads and Wheels and Ellipses
 - Apr 2018 · The Math Talks (for undergraduate students), SUNY Old Westbury
- Lightning Talk: Prep Videos for Math Courses
 - Apr 2018 · The Future of Higher Ed. TLRC Spring 2018 Mini-Conference, SUNY Old Westbury
- Wave Propagation in PT-Symmetric Systems
 - Apr 2017 · Applied Math Seminar, Univ. of Vermont at Burlington
- Overview of Nonlinear Wave Equations Appearing in Cosmological Settings
 - Oct 2016 · Workshop on the Future of Vibration Energy Transfer, Seattle, WA
- Multidimensional discrete compactons in nonlinear Schrödinger lattices
 - Jun 2016 · 4rd Internat. Conf. of Nonlinear Waves Theory and Applications, Tsinghua Univ., Beijing, China
 - May 2016 · Nonlinear Waves Seminar, Umass Amherst
- Eigenstates of chains with embedded defects
 - Apr 2014 · Nonlinear Waves Seminar, Umass Amherst
 - Apr 2014 · Analysis and PDE Seminar, Worcester Polytechnic Institute, Worcester, MA
 - Jun 2013 · 3rd International Conference of Nonlinear Waves Theory and Applications, Beijing, China
- Parametric and other exact solutions to Einstein's equations in terms of special functions
 - Sep 2012 · AMS Eastern Section Meeting, Special Session on Geometric Evolution Equations, RIT, NY
 - Jul 2012 · AWM Workshop at SIAM Annual Meeting AWM Workshop, Minneapolis, MN
- Parametric Solution of Certain Nonlinear Differential Equations in Cosmology
 - Jun 2011 · LT9: Lie Theory and its Applications to Physics, Varna, Bulgaria
 - Jan 2011 · Joint Mathematics Meetings, New Orleans, LA
- Elliptic functions in cosmology
 - Oct 2009 · AMS Fall Central Sectional Meeting, Baylor University, Waco, Texas
- One correspondence used in reformulating Einstein equations for various scalar field cosmologies
 - Jun 2009 · LT8: Lie Theory and its Applications to Physics, Varna, Bulgaria
 - Sep 2009 · Baylor University Mathematical Physics Seminar, Waco, Texas
 - Sep 2009 · Texas A&M University Mathematical Physics Seminar, College Station, Texas
- A linear Schrödinger formulation of d-dimensional Bianchi I cosmology and its relation to BECs
 - Aug 2008 · 5th International Conference of Math. and Computing, Plovdiv, Bulgaria
- On Relating d-dimensional FRLW Cosmology to Bose-Einstein Condensates,
 - Jun 2008 · MSRI Workshop: A Window into Zeta and Modular Physics, UC Berkeley
- A Schrödinger type formulation of some scalar field cosmologies,
 - Mathematical Physics and General Relativity Seminar, UMass Dept of Math & Stats, Nov 2007
- A nonlinear Schrödinger type formulation of FLRW and Bianchi I&V scalar field cosmologies
 - Aug 2007 · 4th International Conference of Math. and Computing, Ploydiv, Bulgaria
- A nonlinear Schrödinger type formulation of FLRW scalar field cosmology,
 - Geometric Relativity and Cosmology Seminar, UMass Dept of Math & Stats, Oct 2006

POSTERS

- Multidimensional discrete compactons in nonlinear Schrödinger lattices
 - Sep 2015 · Conference on Waves, Spectral Theory & Applications, Princeton Univ.
- Uncoupled EMP and linear Schrödinger models for a conformally Bianchi I scalar field cosmology
- Jan 2009 · AWM Workshop for Women Graduate Students and Recent PhDs, Washington D.C. A linear Schrödinger formulation of d-dim. Bianchi I cosmology and its relation to BEC
 - Sep 2008 · Conference on Non-linear Phenomena in Mathematical Physics, Toronto, Canada
- A nonlinear Schrödinger type formulation of FLRW and Bianchi I scalar field cosmologies,
 - Jul 2007 · 18th International Conference on General Relativity and Gravitation, Sydney, Australia

CONFERENCES (\triangle presented)

- May 2019 · DS19: SIAM Conf. on App. of Dynamical Systems, Snowbird, UT
- Aug 2018 \(\triangle \) Internat. Conf. on Nonlin. Phenomena in Bose Condensates & Optical Syst., Tashkent, Uzbekistan
- Apr 2018 \triangle The Future of Higher Ed. TLRC Spring 2018 Mini-Conference, SUNY Old Westbury
- Oct 2017 · Conference on Waves, Spectral Theory & Applications Part 2, Chapel Hill, NC.
- Aug 2017 · Science Education for New Civic Engagements and Responsibilities (SENCER), Stony Brook, NY
- Mar 2017 · Conf. on Financial Math., Farmingdale State College, Farmingdale, NY
- Aug 2016
 SIAM Conf. on Nonlinear Waves and Coherent Structures, Philadelphia, PA
- Jul 2016 · SIAM Annual Meeting, Boston, MA
- Jun 2016 \triangle 4th Internat. Conf. of Nonlinear Waves Theory and Applications, Tsinghua Univ., Beijing, China
- Sep 2015 \(\triangle \) Conference on Waves, Spectral Theory & Applications, Princeton, NJ.
- Jan 2015 · Joint Mathematics Meetings, San Antonio, TX
- Jun 2013 \triangle 3rd International Conference of Nonlinear Waves Theory and Applications, Beijing, China
- Sep 2012 \triangle AMS Eastern Section Meeting, Special Session on Geometric Evolution Equations, Rochester, NY
- Jun 2012 SIAM Conf. on Nonlinear Waves and Coherent Structures, Univ. of Wash., Seattle, WA
- Apr 2012 · Great Lakes Geometry Conference, Ohio State Univ, Columbus, OH
- Jan 2012 · Joint Mathematics Meetings, Boston, MA
- Jun 2011 \triangle LT9: Lie Theory and its Applications to Physics, Varna, Bulgaria
- May 2011 · Conference on Connections in Geometry and Physics: GAP, Fields Institute, Toronto, ON
- Jan 2011 △ Joint Mathematics Meetings, New Orleans
- Oct 2010 Yamabe Memorial Symposium: Geom. and Low-Dim'l Topology 5th Biennial, UMN Twin Cities
- Sept 2010 · Symmetry, Separation, Super-integrability and Special Functions (S4) Conf., UMN Twin Cities
- Jan 2010 · Joint Mathematics Meetings, San Francisco
- Oct 2009 \triangle Represent. Thy. and Math. Phys. Conf. in honor of Gregg Zuckerman's 60^{th} birthday, Yale Univ., CT
- Oct 2009 · AMS Fall Central Sectional Meeting, Baylor Univ., Waco, TX
- Jun 2009 \triangle LT8: Lie Theory and its Applications to Physics, Varna, Bulgaria
- Apr 2009
 AMS Spring Eastern Sectional Meeting, Worcester Polytechnic Institute, Worcestor MA
- Jan 2009 · Joint Mathematics Meetings, Washington D.C.
- Jan 2009 · AWM Workshop for Women Graduate Students and Recent PhDs, JMM, Wash. D.C.
- Sep 2008 △ Conference on Non-linear Phenomena in Mathematical Physics, Fields Institute, Toronto, Canada
- Aug 2008 \triangle 5th International Conference of Math. and Computing, Tech. Univ. of Plovdiv, Bulgaria
- Jun 2008 · Motives, Quantum Field Theory and Pseudodifferential Operators, Boston Univ.
- Jun 2008 △ MSRI Workshop, A Window Into Zeta and Modular Physics, UC Berkeley
- Oct 2007 · AMS Fall Eastern Section Meeting, Rutgers, New Jersey
- Aug 2007 \triangle 4th International Conference of Math. and Computing, Tech. Univ. of Plovdiv, Bulgaria
- v Jul 2007 · 18th Intern. Conf. on General Relativity and Gravitation, Sydney, Australia
- Jul 2007 \triangle 7th Eduardo Amaldi Conf. on Gravitational Waves, Australia
- Jan 2007 · Rethinking Gravity, University of Arizona
- Oct 2006 · AMS Fall Eastern Section Meeting, University of Connecticut