Curriculum Vitae
Yinlin Dong

University of Central Arkansas
Department of Mathematics
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Employment

Associate Professor — Conway, AR
University of Central Arkansas — 08/2023 - present

Assistant Professor — Conway, AR
University of Central Arkansas — 08/2017 - 07/2023

Education

University of Texas at Arlington — Arlington, TX
Ph.D. in Mathematics — 07/2017

The University of Alabama — Tuscaloosa, AL
M.A. in Mathematics — 05/2011

Nankai University — Tianjin, China
B.S. in Computational Mathematics — 07/2005

Research Interests

High Order Numerical Methods
Vortex Visualization Methods
Deformation Method for Grid Generation
Weak Galerkin Finite Element Method

Grants

2023 Summer Stipend, University Research Council, University of Central Arkansas

2020-2021 URC Faculty Research Grant, University of Central Arkansas

2019 Summer Stipend, University Research Council, University of Central Arkansas

2018-2019 Student Undergraduate Research Fellowship (SURF) Program, faculty mentor, Arkansas Department of Higher Education

Publications

Quantitative experimental research on vortex generation and self-maintenance mechanisms in turbulence, *Physics of Fluids* 35, 055118, 2023

Investigation of Vortex Motion Mechanism of Synthetic Jet in a Crossflow, *AIP Advances* 12, 035045, 2022

An Adaptive Moving Grid Finite Difference Method, *Journal of Computational Methods in Sciences and Engineering*, 21(5): 1-11, 2021

A Weak Galerkin Harmonic Finite Element Method for Laplace Equation, *Communications on Applied Mathematics and Computation*, 3: 527-543, 2021

On the Thresholds of Vortex Visualization Methods, *International Journal of Computational Fluid Dynamics*, 34(4): 267-277, 2020

POD Analysis on Vortical Structures in MVG Wake by Liutex Core Line Identification, *Journal of Hydrodynamics*, 32(3): 497-509, 2020

Matrix Form of Deriving High Order Schemes for the First Derivative, *Baghdad Science Journal*, 17(3): 1041-1048, 2020

Determination of Epsilon for Omega Vortex Identification Method, *Journal of Hydrodynamics*, 30(4): 1-9, 2018

New Visualization Method for Vortex Structure in Turbulence by Lambda2 and Vortex Filaments, *Applied Mathematical Modelling*, 40(1): 500-509, 2016

Conference Proceedings

Rules of Tensor and Matrix Operation for Liutex Calculation, Liutex and Third Generation of Vortex Identification, Workshop from Aerospace and Aeronautics World Forum 2021, 35-43

LES Study on Structure Characteristics of Shock/Vortex Ring Interaction, 56th AIAA Aerospace Sciences Meeting, AIAA 2018-1530

Numerical Investigation on the Oblique Shock and High-speed Vortex Rings Interaction, 55th AIAA Aerospace Sciences Meeting, AIAA 2017-0137

DNS Study on Three Vortex Visualization Methods, 55th AIAA Aerospace Sciences Meeting, AIAA 2017-0490

Analysis on Λ-vortex Development in a Transitional Boundary Layer, 54th AIAA Aerospace Sciences Meeting, AIAA 2016-0326

Construction Methodology of Weighted Upwind Compact Scheme, 54th AIAA Aerospace Sciences Meeting, AIAA 2016-2061

Conference Presentations

Rules of Tensor and Matrix Operation for Liutex Calculation — Frankfurt, Germany
Aerospace and Aeronautics World Forum — 12/2021

A Deformation Based Adaptive Moving Grid Method — Spokane, WA
Numerical PDEs, SIAM Conference on Computational Science and Engineering — 02/2019

Weak Galerkin Finite Element Method for Poisson's Equations — Baltimore, MD
Numerical Analysis, Joint Mathematics Meetings — 01/2019

LES Study on Structure Characteristics of Shock/Vortex Ring Interaction — Kissimmee, FL
AIAA Aerospace Sciences Meeting — 01/2018

Numerical Investigation on the MVG Controlled Shock Ring Interaction — Pittsburgh, PA
Fluids, Society for Industrial and Applied Mathematics Annual Meeting — 07/2017

Construction Methodology of Weighted Upwind Compact Scheme — Atlanta, GA
Numerical Analysis and Computer Science, Joint Mathematics Meetings — 01/2017

Solving Poisson's Equations Using Buffered Fourier Spectral Method — Atlanta, GA
Applied Mathematics, Joint Mathematics Meetings — 01/2017

Numerical Investigation on the Oblique Shock and Vortex Rings Interaction — Grapevine, TX
AIAA Aerospace Sciences Meeting — 01/2017

DNS Study on Three Vortex Visualization Methods — Grapevine, TX
AIAA Aerospace Sciences Meeting — 01/2017

Seminar Presentations

On the Threshold of Vortex Visualization Methods — Conway, AR
Department of Mathematics, University of Central Arkansas — 09/2020

Weak Galerkin Finite Element Method for Poisson's Equations — Conway, AR
Department of Mathematics, University of Central Arkansas — 10/2018

Vortex Visualization Methods Applied on Shock Ring Interaction — Jackson, MS
Department of Mathematics & Statistical Sciences, Jackson State University — 03/2018

A Deformation Method for Adaptive Grid Generation — Conway, AR
Department of Mathematics, University of Central Arkansas — 11/2017

Graduate Students Research

Mason Boone, Mathematics Graduate
Project:
Fall 2023: Finite Difference Method for the Wave Equation

Garrott Granholm, Mathematics Graduate
Project:

Summer 2023: Comparison of Iterative Techniques for Solving a System of Equations

Nathaniel Gregg, Mathematics Graduate
Thesis:
2020-2021: An Adaptive Moving Mesh Method in Three Dimensions
Project:
Summer 2020: Compact Finite Difference Methods for Boundary Value Problems
Presentation:
2021 CNSM Symposium: Spectral-like Finite Difference Schemes for Boundary Value Problems

Undergraduate Students Research

Sarah Friedman, Chemistry Major
Project:
Summer 2020: Helping Fight Chagas Disease with a Mathematical Model

Monica Davanzo, Mathematics Major
Grant:
2018-2019 Student Undergraduate Research Fellowship (SURF) Program, Weak Galerkin Finite Element Method for Poisson's Equations on Quadrilateral Grids
Project:
Summer 2018: Solving Differential Equations Using Buffered Fourier Spectral Method
Conferences:
July 2019: MAA MathFest Student Paper Session, Cincinnati, OH
January 2019: MAA Undergraduate Student Poster Session, JMM, Baltimore, MD
November 2018: 14th MAKO Undergraduate Math Research Conference, Missouri State University, Springfield, MO
Position after graduation:
PhD program in Mathematics, University of Arkansas

Honors and Awards

Recognition for Efforts to Obtain External Funding for Creative Activities, Scholarship, and Research
Sponsored Programs, UCA, July 2018 - June 2019

Recognition of Successful Completion of, and Professional Growth as a Protégé in, the Minority Faculty Mentoring Initiative
Office of Institutional Diversity, UCA, May 2018

Recognition of Achievement in Teaching Excellence - Pedagogy
Center for Teaching Excellence, UCA, April 2018

Faculty Development Grant
Center for Teaching Excellence, UCA, November 2017

2017 SIAM Student Travel Award
Society for Industrial and Applied Mathematics

2017 JMM Grad Student Travel Grant
American Mathematical Society

2016-2017 Stephen R. Bernfeld Memorial Scholarship
Department of Mathematics, University of Texas at Arlington

Committees

Graduate Committee Coordinator, 08/2023 - present

Recruitment and Retention Committee, 08/2023 - present

Diversity, Equity and Inclusion Committee, 08/2020 - present

Technology Committee, 08/2018 - present

Applied Mathematics Committee, 08/2017 - present

College Research Committee, 08/2017 - 05/2020

Graduate Student Thesis Committee Chair

Nathaniel Gregg, Summer 2021
Thesis: An Adaptive Moving Mesh Method in Three Dimensions

Graduate Student Thesis Committee

Dylan Killough, Summer 2021
Thesis: Symmetry in Nonlinear Finite Elasticity - Plane Deformations of Incompressible Materials

Travis Chism, Summer 2021
Thesis: Symmetry Classification of 2D Transformations of Hyperelastic Compressible Materials

Andrea Weaver, Spring 2020
Thesis: First Integrals in Finite Elasticity

Jason Yingling, Summer 2019
Thesis: Multiple Imputation of Missing Data via Gradient Boosted Trees

Kenneth Jumper, Summer 2019
Thesis: Symmetry Analysis of a Fourth Order Nonlinear Partial Differential Equation

Undergraduate Student Thesis Committee

Azaryah Wilson, Honors College, Spring 2018
Thesis: A PDE Method for Population Movement in an Epidemic