Faculty Research Presentations

2009

Method of Vector Lyapunov Functions for Hybrid Fractional Differential Equation
M. Sambandham, Morehouse College
Plenary Lecture sessions of the International Conference on Mathematical and
Computational Models (ICMCM, 2009), PSG College of Technology, Coimbatore, India,

Lyapunov Theory for Hybrid Impulsive Fractional Differential Equations
M. Sambandham, Morehouse College
Plenary Lecture sessions of the International Conference on Recent Advances in
Mathematics Sciences and Applications, Institute of Advanced Studies, GVP College of

Comparison Theorem & Stability Properties Of Hybrid Fractional Differential Equation
M. Sambandham, Morehouse College
Invited Lecture, Seventh University of South Florida Interdisciplinary Workshop on Cancer
and Hybrid Dynamic Systems, October 30, 2009.

Numerical Solution of Hybrid Fractional Differential Equations
Steve Pederson and M. Sambandham, Morehouse College
Colloquium Talk, PSG College of Technology, India, May 25, 2009.

On the Real Roots of Random Polynomials
M. Sambandham, Morehouse College
Colloquium Talk, Annamalai University, Annamalai Nagar, India, May 21, 2009.

Properties of Random Polynomials
M. Sambandham, Morehouse College
Invited Lecture, 6th University of South Florida (USF) Workshop on "Stochastic Dynamic

On the Holonomy of the Coulomb Connection over Manifolds with Boundary
William E. Gryc, Morehouse College
Special Session on Infinite Dimensional Analysis, Path Integrals and Related Fields, AMS

Numerical Solution of Hybrid Fractional Differential Equations
S. Pederson and M. Sambandham, Morehouse College
Invited Talk in AMS Special Session on Stochastic, Large-Scale, and Hybrid Systems with

2008
Numerical Solution of Hybrid Fractional Differential Equations
S. Pederson and M. Sambandham, Morehouse College
Department of Mathematics and Statistics Colloquium, Georgia State University, November 11, 2008.

Recent developments in random polynomials
M. Sambandham, Morehouse College

The Truly Outstanding Global Organizational and Interpersonal Interaction Skills of Prof. Lakshmikantham
M. Sambandham, Morehouse College

The geometry of a class of embeddings of the plane
Abdelkrim Brania, Morehouse College
Fifth World Congress of Nonlinear Analysts (WCNA), Orlando, FL, July 1-9, 2008.

Beating the Dow with a Three-input Neural Network
John Merkel, Morehouse College

Variation of Constants Method for Stochastic Discrete Systems
G. S. Ladde, University of South Florida and M. Sambandham, Morehouse College
Invited Talk in AMS Special Session on Stochastic, Large-Scale, and Hybrid Systems with Applications, AMS National Meeting, San Diego, CA, January 6-9, 2008.

Efficacy of Peer-Led Team Learning in Calculus I at Morehouse College
John Merkel, Morehouse College

2007

A Probabilistic Model of Cumulative Voting with Implications for Dynamical System Simulation
Duane Cooper, Morehouse College

Addition Theorems of Fuzzy Integers of Triangular Types
Chuang Peng, Morehouse College

Singularities of Quadratic Differentials and Pseudo-Anosov maps of Riemann Surfaces
Chaohui Zhang, Morehouse College
Numerical solution to hybrid stochastic differential systems
**Steve Pederson** and **M. Sambandham**, Morehouse College

A Comparison of Cumulative and Generalized Plurality Voting
**Duane Cooper**, Morehouse College and **A. Zillante**
First World Meeting of the Public Choice Societies, Amsterdam, March 29 - April 1, 2007.
The Average Number of Real Zeros of a Random Trigonometric Polynomial
**Farouk Brania**, Morehouse College

Addition Theorems of Fuzzy Integers of Linear Triangular Types
**Chuang Peng**, Morehouse College

2006

Hybrid Fuzzy Systems and Applications
**M. Sambandham** and **Steve Pederson**, Morehouse College

The Mapping Problems for Quasi-conformal Maps
**Farouk Brania**, Morehouse College

Colloquium lecture in "Applied Mathematics"
**M. Sambandham**, Morehouse College
Invited Colloquium talk at the University of Texas at Arlington, Arlington, TX, November 3, 2006.

Numerical Treatment of Hybrid Fuzzy Systems
**M. Sambandham** and **Steve Pederson**, Morehouse College

Homoclinic trajectories for fuzzy differential equations
**Steve Pederson**, Morehouse College
Third International Conference on Neural, Parallel, and Scientific Computations, Morehouse College, Atlanta, August 9-12, 2006.

Picking Stocks with a Two Input ANN
**John Merkel**, Morehouse College
Third International Conference on Neural, Parallel, and Scientific Computations, Morehouse College, Atlanta, August 9-12, 2006.

Numerical Treatment of Hybrid Fuzzy Differential Equations
**M. Sambandham** and **Steve Pederson**, Morehouse College
Third International Conference on Neural, Parallel, and ScientificComputations, Morehouse College, Atlanta, August 9-12, 2006.

A Study Note on Fuzzy Elements and Operations
Chuang Peng, Morehouse College
Third International Conference on Neural, Parallel, and Scientific Computations, Morehouse College, Atlanta, August 9-12, 2006.

On the average number of real zeros of random hyperbolic polynomials
R. Bozeman, M. Sambandham, Morehouse College, and K. Farahmand, University of Ulster, N. Ireland
Third International Conference on Neural, Parallel, and Scientific Computations, Morehouse College, Atlanta, August 9-12, 2006.

Beating the Dow using Artificial Neural Networks
John Merkel, Morehouse College
International Symposium of Forecasting in Santander, Spain, June 2006.

A numerical approach to Hybrid Fuzzy Systems
M. Sambandham and Steve Pederson, Morehouse College
Invited talk for The International Conference of Hybrid Systems and Applications
The University of Louisiana, Lafayette, LA, USA, May 22-26, 2006.

Additive Theorems and Davenport Constant over Finite Groups
Chuang Peng, Morehouse College
AMS Annual Meeting, San Antonio, TX, January 12, 2006.

Numerical Solution to Hybrid Fuzzy Systems
M. Sambandham and Steve Pederson, Morehouse College

2005

Boundedness Properties of Hybrid Fuzzy Differential Equations
M. Sambandham, Morehouse College,

Recent Developments on Hybrid Fuzzy Differential Equations
M. Sambandham, Morehouse College,
International Conference on Differential Equations, Florida Institute of Technology, August 1-4, 2005.

Fuzzy homoclinic orbits and commuting fuzzifications
Steve Pederson, Morehouse College,
Random Polynomials
**M. Sambandham**, Morehouse College,
University of Ulster, UK, May 5-14, 2005.

Quantifying Fairness to Individual Voters in Multimember versus Single-member Districts
**Duane Cooper**, Morehouse College,

Spatial Modeling and Quantifying Fairness of Cumulative Voting
**Duane Cooper**, Morehouse College,

Holomorphic family and Bers fiber space
**Chaohui Zhang**, Morehouse College,
AMS Annual Meeting, Special Session on Topics in Geometric Function Theory, January 8, 2005.

Office Management: A Markov Model
**Gregory Battle**, Morehouse College,

On Maximal Ultimately Economical Subgraphs
**Curtis Clark**, Morehouse College,

Minimum Degrees of Polynomial Models on Time Series
**Chuang Peng**, Morehouse College,
AMS Annual Meeting, Session on Analysis IV, January 7, 2005.

Structure Theorems For Matrix Rings Over Moore-Penrose Two (MP2) Rings
**Gregory Battle**, Morehouse College,

2004

Extensions of quasiconformal mappings to the boundary
**Farouk Brania**, Morehouse College,

The Role of Technology in Math Education
**D.-T. Wu**, Morehouse College,
ICME-10, Copenhagen, Denmark, July 4-11, 2004.

Some numerical methods to random equations
**M. Sambandham**, Morehouse College,
Minimum Degrees of Polynomial Models on Time Series

**Chuang Peng**, Morehouse College,
AIMS Fifth International Conference, Pomona, CA, June 19, 2004.

Fuzzy Differential Equation on Time Scale

**M. Sambandham**, Morehouse College,
Colloquium Presentation, Bharathidasan University, Trichy, India, 2:30 - 3:30 PM, March 9, 2004.

Time Scale and Quantum Calculus

**M. Sambandham**, Morehouse College,

Time Scale and Quantum Calculus

**M. Sambandham**, Morehouse College,
Colloquium Presentation, Annamalai University, Annamalai Nagar, India, 9:30-10:30 AM, March 8, 2004.

Linear Transformations on Polynomial Models of Time Series

Aihua Li and **Chuang Peng**, Morehouse College,
AMS Special Session on Dynamical Systems and Difference Equations,
Annual meeting of the American Mathematical Society,

Hybrid Fuzzy Systems on Time Scale

**M. Sambandham**, Morehouse College,
AMS Invited Special Session on Time Scales and Applications,
Annual meeting of the American Mathematical Society,

On The Nature of Mathematical Thought and Inquiry: A Prelusive Suggestion

**P. McLoughlin**, Morehouse College,
Special MAA session on the Philosophy of Mathematics,
Mathematical Association of America annual meeting, Phoenix, AZ, January 9, 2004

**2003**

Hybrid Fuzzy Differential Equations on Time Scale

**M. Sambandham**, Morehouse College,
The Thirty-Third Annual Lloyd Roeling Mathematics Conference, University of Louisiana at Lafayette, Lafayette, LA, October 24-26, 2003

Stability of Hybrid Fuzzy Differential Equations

**M. Sambandham**, Morehouse College,
Colloquium Presentation, Georgia Southern University, October 16, 2003

Error Estimates to Ito-Type Equations

G.S. Ladde, University of Texas at Arlington,
**S. Pederson**, and **M. Sambandham**, Morehouse College,
Twelfth International Colloquium on Numerical Analysis and Computer Science with Applications, Plovdiv, Bulgaria, August 12-17, 2003

Practical Stability of Hybrid Differential Equations
**A. Brania, C. Finley**, and **M. Sambandham**, Morehouse College,
MATHTOOLS’ 2003, Fourth International Conference "TOOLS FOR MATHEMATICAL MODELING" in honor of the 300th anniversary of St. Petersburg, State Polytechnic University, St. Petersburg, Russia, June 23-28, 2003

Numerical Estimation of Payload Munitions Using Random Distributions
**Gregory Battle**, Morehouse College,

Quasimobius invariance of Loewner domains and QED domains
**A. Brania**, Morehouse College,
Rolf Nevanlinna Colloquium, Jyvaskyla, Finland, June 18, 2003

White Noise Perturbation in a Model Equation for the Viscoelastic Response of Rubber in Tensile Deformation
N. Begashaw, Benedict College, SC,
Negash G. Medhin, North Carolina State University, and
**M. Sambandham**, Morehouse College,

Boolean Algebra Structure on Sigma (S)
**Chuang Peng**, Morehouse College,

Application of Approximate Scheme for Stochastic Oscillators in Studying of Stochastic Resonance of Noninvasive Control
**De Ting Wu**, Morehouse College,

Spatial Analysis of Cumulative Voting with Dynamical System Simulation
**Duane A. Cooper**, Morehouse College,

Homoclinic orbits and bifurcation of entropy-carrying sets
**Steven M. Pederson**, Morehouse College,

Problems related to the numerical estimation of mine kills
**Gregory Battle**, Morehouse College,

Hybrid Fuzzy Systems on Time Scale
M. Sambandham, Morehouse College,

The Assessment of Approximate Unidimensionality in Item Response Spaces: An Empirical Comparison of the Utility of Several Methods.
P. McLoughlin, Morehouse College, Atlanta, GA,

A Mathematical Analysis and Model of Cumulative Voting
Duane A. Cooper, Morehouse College
Spelman College Mathematics Department Seminar, 4 pm, April 15, 2003

The Potential of Cumulative Voting to Yield Fair Representation
Duane A. Cooper, Morehouse College

On Economical and Spannable Linear Forest (Preliminary Report)
Curtis Clark, Morehouse College, Atlanta, GA,
Frank Harary, and Thomas Storer
(Joint Mathematics Meetings, Baltimore, MD, January 2003)

Initiating and Continuing Undergraduate Research in Mathematics: Using the Fusion Method of Traditional, Moore, and Constructivism to Encourage, Enhance, and Establish Undergraduate Research in Mathematics
Padraig McLoughlin, Morehouse College, Atlanta, GA
(MAA/AMS Joint meetings, Baltimore, MD, January 2003)

On Random Trigonometric Polynomials
Robert Bozeman and M. Sambandham, Morehouse College
(Annual meeting of the American Mathematical Society, Baltimore, MD, January 15-18, 2003)

Error Estimates for Boundary Value Problems of Ito-type
G. S. Ladde, University of Texas at Arlington and M. Sambandham, Morehouse College
(Annual meeting of the American Mathematical Society, Baltimore, MD, January 15-18, 2003)

Reflections on and Visions of Minority Participation in Mathematics Competitions
Duane Cooper, Morehouse College, Atlanta, GA
(Mathematical Association of America annual meeting, Baltimore, MD, January 2003)

The Fusion Method of Traditional, Moore, and Constructivism and the Incorporation of Undergraduate Research through the Mathematics Curriculum
Padraig McLoughlin, Morehouse College, Atlanta, GA
(Mathematical Association of America annual meeting, Baltimore, MD, January 2003)

An Inventive Use of the WWW as a Teaching and Learning Tool in Mathematics: Structured Web Materials for Courses Across the Mathematics Canon
Padraig McLoughlin, Morehouse College, Atlanta, GA
(Mathematical Association of America annual meeting, Baltimore, MD, January 2003)

2002

Materials Science: Another Career Option for Mathematics Majors
Shirley Thompson, Morehouse College, Atlanta, GA
(Morehouse College Mathematics Department Colloquium, September 26, 2002)
The Central Role of Proof in the Mathematics Canon: The Efficacy of Teaching Students to Create Proofs Using a Fusion of Modified Moore, Traditional, and Reform Methods
Padraig McLoughlin, Morehouse College, Atlanta, GA
(Mathematical Association of America meeting, Burlington, VT, August 2002)

Numerical Schemes and PC Program for Stochastic Oscillators
De Ting Wu, Morehouse College
(Eleventh International Colloquium on Numerical Analysis and Computer Sciences with Applications, Plovdiv, Bulgaria, August 12-18, 2002)

Boundedness Properties of Hybrid Fuzzy Differential Systems
M. Sambandham, Morehouse College, Atlanta, GA
(Eleventh International Colloquium on Numerical Analysis and Computer Sciences with Applications, Plovdiv, Bulgaria, August 12-18, 2002)

A Proof and a PC Program for Runge-Kutta Method of Order 3 of ODE
De Ting Wu and Robert Bozeman, Morehouse College, Atlanta, GA
(Second International Conference on Neural, Parallel, and Scientific Computations, Morehouse College, Atlanta, U.S.A. August 7-10, 2002)

The importance of Profile Analysis and Covariance Analysis on Four Independent Variables
Shirley W. Thompson, Morehouse College, Atlanta, GA
(Second International Conference on Neural, Parallel, and Scientific Computations, Morehouse College, Atlanta, U.S.A. August 7-10, 2002)

An Investigation of the Robustness and Stability of the DeChamplain - Gessaroli Approximate Chi-Square Statistic to Assess Fundamental Unidimensionality in Item Response Spaces
Padraig McLoughlin, Morehouse College, Atlanta, GA
(Second International Conference on Neural, Parallel, and Scientific Computations, Morehouse College, Atlanta, U.S.A. August 7-10, 2002)

The move number of the four-cycle is six
Curtis Clark, Morehouse College, Atlanta, GA and Frank Harary and Thomas Storer, New Mexico State University, NM
Addition Theorems over Finite Groups
Chuang Peng, Morehouse College, Atlanta, GA
(Second International Conference on Neural, Parallel, and Scientific Computations, Morehouse College, Atlanta, U.S.A. August 7-10, 2002)

Random trigonometric polynomials with stable distribution
Maya C. Mukherjee, Morehouse College, Atlanta, GA and
M. Sambandham, Morehouse College, Atlanta, GA
(Second International Conference on Neural, Parallel, and Scientific Computations, Morehouse College, Atlanta, U.S.A. August 7-10, 2002)

Comparison Theorem for Hybrid Fuzzy Differential Equations
Abdelkrim Brania, Morehouse College, Atlanta, GA,
Negash G. Medhin. Clark Atlanta University, GA, and
M. Sambandham, Morehouse College, Atlanta, GA
(Second International Conference on Neural, Parallel, and Scientific Computations, Morehouse College, Atlanta, U.S.A. August 7-10, 2002)

Real Zeros of Random Trigonometric Polynomials
Robert Bozeman, Morehouse College, Atlanta, GA,
M. Sambandham, Morehouse College, Atlanta, GA
(Second International Conference on Neural, Parallel, and Scientific Computations, Morehouse College, Atlanta, U.S.A. August 7-10, 2002)

A continuous 2-parameter family with nonconnected iso-entropy curves
Abdelkrim Brania, Morehouse College, Atlanta, GA,
Steve Pederson, Morehouse College, Atlanta, GA
(Second International Conference on Neural, Parallel, and Scientific Computations, Morehouse College, Atlanta, U.S.A. August 7-10, 2002)

Random and Fuzzy Differential Equations
M. Sambandham, Morehouse College, Atlanta, GA
(Invited Lecture for Workshop on UGC Sponsored Refresher Course in Mathematics, Annamalai University, India June 05-25, 2002)

On Homoclinic Tangencies in Maps with Entropy-carrying Horseshoes
Steve Pederson, Morehouse College
(Fourth International Conference on Dynamical Systems and Differential Equations, Wilmington, North Carolina, May 24-27, 2002)

Stability Properties of Hybrid Fuzzy Differential Systems
M. Sambandham, Morehouse College, Atlanta, GA
(Fourth International Conference on Non-linear Problems in Aviation and Aerospace, May 15-17, 2002, Florida Institute of Technology, FL)
The Expectation Maximization (EM) Algorithm
Maya C. Mukherjee, Morehouse College, Atlanta, GA
(24th Annual Mathematics Award Day, Morehouse College, Atlanta, U.S.A., April 23, 2002, 4:00 PM, Dansby 201)

Extensions of Quasiconformal Mappings
Abdelkrim Brania, Morehouse College
(April 2, 2002, 4:30 pm, Dixieland Analysis Seminar, Department of Mathematics, Emory Univ.)

On ultimately economical digraphs
Curtis Clark, Morehouse College, Atlanta, GA
(AMS Special Session on Combinatorics and Graph Theory, 2002 AMS and MAA Spring
Southeastern Section Meetings, Atlanta, GA, March 8-10, 2002)

Stability Properties of Hybrid Fuzzy Differential Equations on Time Scale
M. Sambandham, Morehouse College, Atlanta, GA
(AMS Special Session on Dynamic Equations on Time Scales, 2002 AMS and MAA Spring
Southeastern Section Meetings, Georgia Institute of Technology, Atlanta, GA, March 8-10, 2002)

Average Number of Real Zeros of Random Polynomials
Robert Bozeman and M. Sambandham, Morehouse College
(2002 AMS and MAA Spring Southeastern Section Meetings, Georgia Institute of Technology, Atlanta, GA, March 8-10, 2002)

On Ultimately Economical Digraphs
Curtis Clark, Morehouse College
(Research Seminar at the Department of Mathematics, Morehouse College, Atlanta,
February 19, 2002, 4:00pm Dansby 330)

Error Estimates and Stability Properties of Selected Random Equations
M. Sambandham, Morehouse College
(Research Seminar at the Department of Mathematics, Morehouse College, Atlanta,
February 12, 2002, 4:00pm Dansby 330)

Seminar Presentation
Dr. Gregory Battle, Morehouse College, Atlanta, GA
Center of Excellence & E^2M Scholars, Morehouse College, Thursday, January 24, 2002

Stability Properties of Hybrid Fuzzy Differential Equations
M. Sambandham, Morehouse College, Atlanta, GA
(The Joint Mathematics Meetings, January 6-9, 2002 San Diego, CA)

2001

Uniformizing Gromov Hyperbolic Spaces.
Abdelkrim Brania, Morehouse College
(December 4, 2001, Seminar lecture, Department of Mathematics, Emory Univ.)
Topological Entropy and The Complexity of Maps.
**Steve Pederson**, Morehouse College
(October 16, 2001, Morehouse College Mathematics Department Colloquium)

Numerical Solution to Random Boundary Value Problems.
G. S. Ladde, University of Texas at Arlington, TX
N. G. Medhin, Clark Atlanta University, GA
**M. Sambandham**, Morehouse College
(October 5-6, 2001 AMS Sectional Meeting, Chattanooga, TN)

Domains with controlled modulus and quasiconformal mappings.
**Abdelkrim Brania**, Morehouse College and Shanshuang Yang, Emory University, GA
(October 5-6, 2001 AMS Sectional Meeting, Chattanooga, TN)