2011 Hawaii University International Conferences
On
Mathematics and Engineering

June 13 – 15. 2011

Ala Moana Hotel

Honolulu, Hawaii

Welcome to the Hawaii University International Conferences' Annual Math & Engineering Conference

ALOHA!

We would like to welcome all of you to our annual Math & Engineering Conference for 2011. We trust you will gain much knowledge and new understandings in your field of endeavor. This is an exciting opportunity for those who attend this conference to interact with fellow academic people from many different universities throughout the nation and world. They bring with them a wealth of knowledge and experiences in their particular disciplines to share with each and everyone who attends the sessions each day in the presentations scheduled in the conference rooms.

We hope you enjoy all the amenities of our host, the Ala Moana Hotel, a prime hotel in the Waikiki area of Honolulu offering a convenient location to the America's largest shopping next door. Waikiki Beach and prime restaurants are close by as well as the many tour offerings to enhance your Hawaiian experience. Be sure to check with the hotel's activity desk for all the latest adventures and tours to make your trip to these islands a memorable experience.

These Islands of Aloha offer a very unique experience for all people who visit to gain a better understanding of the Hawaiian culture and it's spirit only found in this islands. Enjoy some of the best weather and beaches found anywhere in the world, and take your experiences home with you to return another day.

We look forward to seeing you again at future conferences!

E Komo Mai!

(All are Welcome!)

Please visit our website for more details on the next conference.

Website: http://huichawaii.org
Email: mathengineering@huichawaii.org
Office Phone: 1- 808-537-6500

REGISTRATION HOURS

Hibiscus Foyer -2nd Floor

Sunday-June 12   2:00 PM - 5:00 PM

Monday-June 13   7:00 AM - 4:30 PM

Tuesday-June 14   7:00 AM - 4:30 PM

Wednesday-June 15   7:00 AM -12:00 Noon

Breakfast

Monday-June 13   7:00 AM – 8:15 AM

Tuesday-June 14   7:00 AM – 8:15 AM

Wednesday-June 15   7:00 AM – 8:15 AM

CONCURRENT SESSION TIMES

8:15 AM- 9:45 AM * 10:00 AM- 11:30 M * 1:00 PM-2:30 PM * 2:45 PM- 4:15 PM
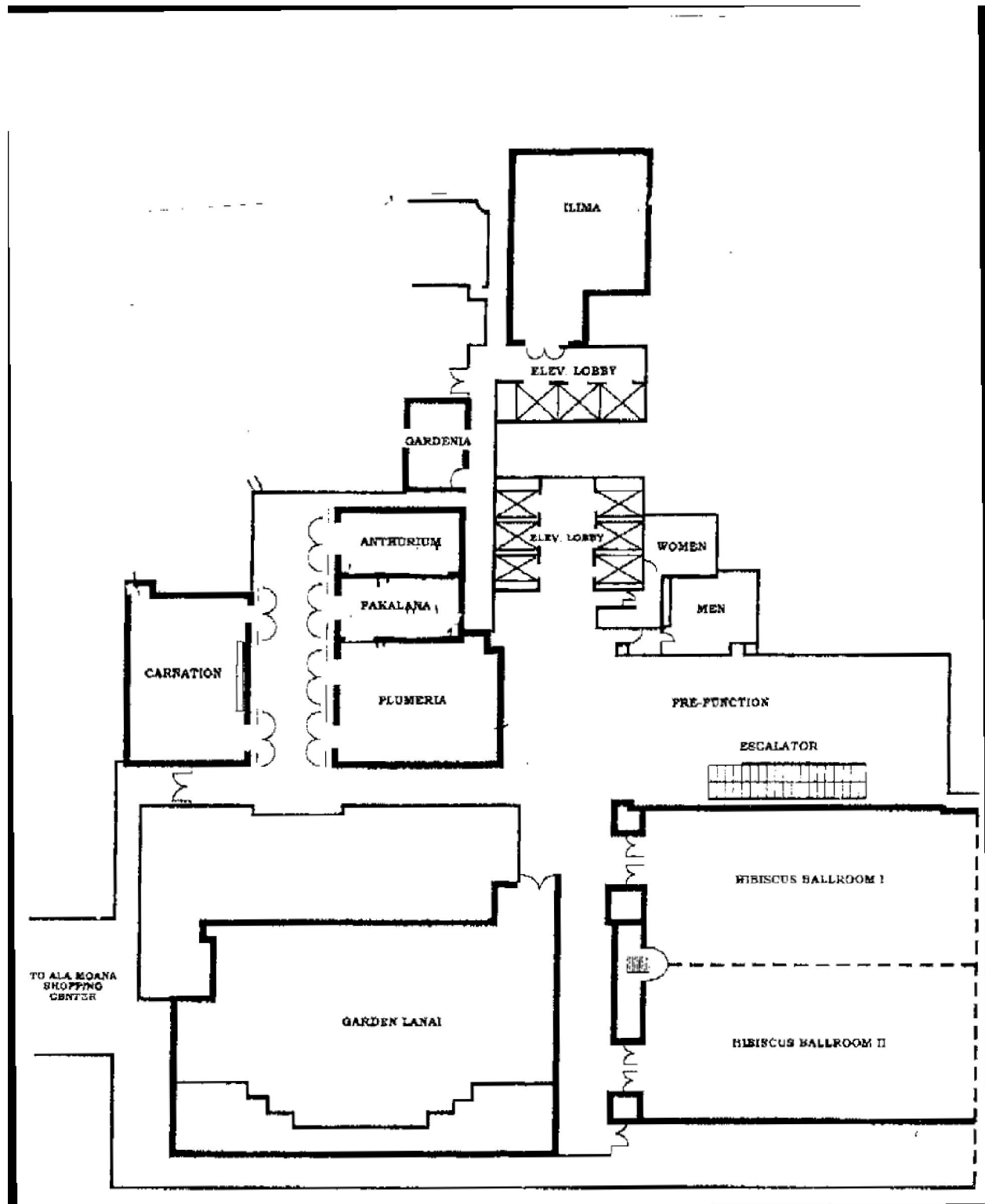
LUNCH   BREAK

11:30 AM-12:45 PM

SESSION CHAIRS

- Introductions of Participants
- Start and complete sessions on time
- Chair leads the discussions and hold question and answer period at end of session

POSTER SESSIONS

TUESDAY- JUNE 14 IN CARNATION ROOM- 1:00 PM- 2:30 PM

Keynote Speaker

Monday - 06/13/2011

Time: 7:30-8:00AM   Room: Hibiscus Ballroom

Dr. Randy Goldman

College of Natural and Computational Sciences Mathematics and Computer Science PH.D.
Logic and Methodology of Science, University of California at Berkeley in 2000
Assistant Professor of Mathematics- Hawaii Pacific University-Honolulu, Hawaii
Areas of Interest: Recursion Theory, Model Theory including Saturated Model Theory; Set Theory; Real Analysis and Topology; Measure Theory and Lebesgue Integration; Non-standard Analysis; Abstract Algebra; Complex Analysis; Functional Analysis; Discrete Mathematics; Combinatorial Mathematics; Computational and Descriptive Complexity; Algorithms
Areas of Specialization: Mathematical Logic, including Modal Logic; Metamathematics
Other areas of Interest: I am an avid sports fan. I am interested in Tae Kwon Do, Swasthya Yoga, Basketball and Tennis. I have recently become interested in Quantum Logic and Philosophical Foundations for Quantum Mechanics.

Monday - 06/13/2011

Time: 8:15-9:45AM   Room: Carnation

Session: Mathematics-Education/Discrete

Session Chair: Dr. John Lanttanzio

1. Title: *Partition Types*

For a graph G having chromatic number k, an equivalence relation is defined on the set X consisting of all proper vertex k-colorings of G. This leads naturally to an equivalence relation on the set P consisting of all partitions of $V(G)$ into k independent subsets of color classes. The notion of a partition type arises and the algebra of types is investigated.

Author/Presenter: Dr. John Lanttanzio ---- Indiana University of Pennsylvania

2. Title: *A JAVA Program for the Gale-Shapley Algorithm*

The Gale-Shapley algorithm was developed to pair men and women who had expressed their individual preferences about one another. Their pairings should result in stable marriages. A marriage is considered stable if no spouse is motivated to select another. Perhaps the problem is not realistic but it has attracted considerable mathematical interest.

Author/Presenter: Dr. Lisa Evered ---- Iona College
Author: Mr. William May ----- Iona College

3. Title: *Excursions in the Predecessor Trees of the Accelerated Collatz Map*

Building on the result in *[6]*, we examine the structure that emerges within the predecessor structure of the *accelerated Collatz map C:* N   N

Author/Presenter: Dr. Andrey Rukhin ---- Naval Surface Warfare Center – Dahlgren Division

Monday- 06/13/2011

Time: 8:15-9:45AM   Room: Plumeria

Session: Mathematics-Financial

Session Chair: Dr. Qin Lu

1. Title: *Value at Risk Estimation: A Review and Extension*

This paper: (1) provides a review and analysis of VaR (Value at Risk) estimation methodologies, and (2) extends VaR estimation with two new models. Both of the new models use the Cornish-Fisher-Approximation methodology in the context of the Delta-Gamma normal model to include underlying factors. The first model utilizes the normal mixture distribution for the underlying factors while the second model uses a jump diffusion model.

Author: Dr. Donald R Chambers ---- Lafayette College
Author/Presenter: Dr. Qin Lu ---- Lafayette College

2. Title: *Classification of Frontier Markets Using k-Nearest Neighbors and Ensemble Masks*

Economists use Developed, Emerging, and Frontier as classifiers for types of national markets. Frontier Markets are sort of like 'Emerging'-Emerging markets with lower market capitalization and liquidity. Investors are showing more interest in Frontier markets due to potential high returns and low correlations, and to capture gains as Frontier nations break into the realm of Emerging markets.

Author: Major Chris Eastburg ---- United States Military Academy, West Point
Author/Presenter: Major Benjamin Thirey ----   United States Military Academy, West Point

Monday - 06/13/2011

Time: 8:15-9:45AM   Room: Pakalana

Session: Engineering - Renewable and Non-Renewable Energy Sources

Session Chair: Dr. A.J. S.(Sam) Spearing

1. Title: ***Energy Options and Issues Facing the USA***

The USA is facing an energy crunch as oil reserves are finite and dwindling internationally, global warming is an issue and our appetite for energy continues to grow with little signs of any necessary and meaningful savings. The country desperately needs a long term federal energy policy but little seems to be forthcoming in this regard. This paper critically reviews the energy options available and suggests a way forward that may not be popular.

Author/Presenter: Dr. A.J. S.(Sam) Spearing ---- Southern Illinois University, Carbondale
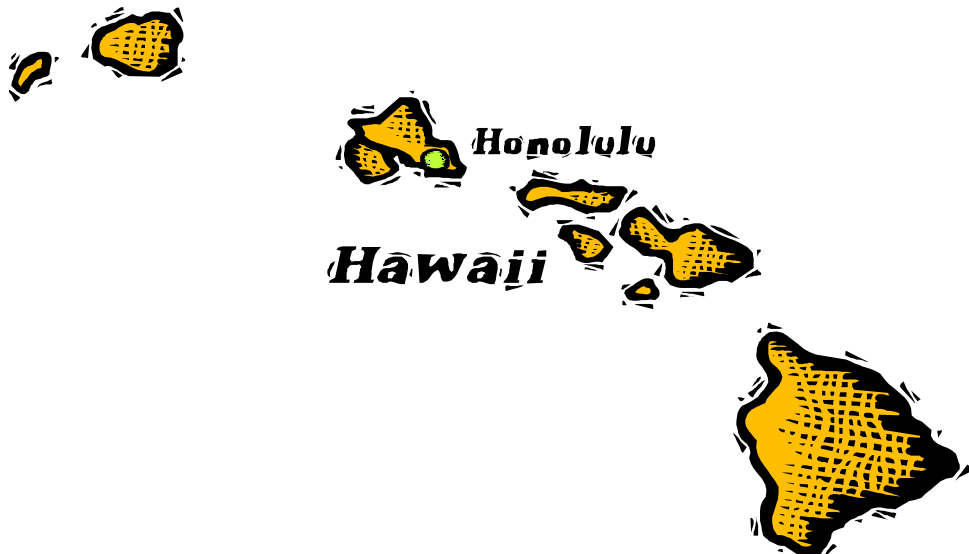
Monday - 06/13/2011

Time: 8:15-9:45AM   Room: Ilima

Session: Engineering-Optimization

Session Chair: Dr. Kenneth Willmert

1. Title: ***A Feature-Based Automated Analysis-Design Tool Using Commercial Software***

Designing a complex product requires many disciplines. Major technical difficulties associated with this are the creation of robust parametric geometry so that accurate analysis and optimization can be accomplished, and complexities related with software integration.

Author: Dr. Steven Finley ---- Pratt & Whitney
Author: Dr. Pier Marzocca ---- Clarkson University, Potsdam
Author/Presenter: Dr. Kenneth Willmert ---- Clarkson University, Potsdam

2. Title: ***Heuristic and Metaheuristic Approaches for Optimizing Traffic Signal Control***

This proposal discusses the development of a heuristic approach, via Webster's method for signal splitting, and a metaheuristic approach, via tabu search, to finding the solution to the signalized intersection optimization problem.

Author/ Presenter: Dr. Michael Shenoda ---- The College of New Jersey

3. Title: ***Variational Principles and Information Theory in Turbulence and Flow Optimization***

A variational optimization duality principle is theoretically formulated with applications to turbulent flow optimization. We theoretically suppose a duality principle in which variational problems are viewed as the inverses of optimization problems.

Author/Presenter: Dr. Haris J. Catrakis ---- University of California, Irvine

Monday - 06/13/2011

Time: 10:00-11:30AM   Room: Carnation

Session: Workshop Mathematics - Algebra, Pre-Algebra, Mathematics Education

Session Chair: Dr. Denine Burkett

1. Title: *Using Algebra Tiles to Teach Algebra Conceptually While Aligning with the Common Core Mathematics Standards*

In this workshop, algebra tiles (e.g., Algebra Lab Gear) will be used to show how the concepts of algebra can be taught with hands-on, concrete manipulatives. These manipulatives allow students to physically manipulate algebraic expressions which allow students to bridge the gap from concrete arithmetic to abstract algebraic concepts. Furthermore, the meaning of symbolic manipulation (e.g., the algebraic operations of addition, subtraction, multiplication, and division of polynomials), factoring, and solving quadratic equations are just a few of the topics demonstrated in the workshop.

Author/Presenter: Dr. Denine Burkett ---- Lock Haven University of Pennsylvania

Monday - 06/13/2011

Time: 10:00-11:30AM   Room: Plumeria

Session: Mathematics-Numerical Analysis

Session Chair: Dr. Duc T. Nguyen

1. Title: ***Mathematical and Engineering Tools/Software/Game for Learning STEM Topics***

Solving large (and sparse) system of simultaneous linear equations has been (and continue to be) a major challenging problem for many real-world engineering/science applications [1-2]. For many practical/large-scale problems, the sparse, Symmetrical and Positive Definite (SPD) system of linear equations can be conveniently represented in matrix notation as $[A]\{x\} = \{b\}$, where the square coefficient (non-singular) matrix $[A]$ and the Right-Hand-Side (RHS) vector $\{b\}$ are known.

Author/Presenter: Dr. Duc T. Nguyen ---- Old Dominion University
Dr. S. Kadiam---- Old Dominion University
Dr. A. Kaw ---- University of South Florida
Dr. A. Yalcin ---- University of South Florida
Dr. Lee G. Thomas --- Old Dominion University
Dr. A. Mohammed --- Old Dominion University
Dr. R. Pendyala ---- Arizona State University

2. Title: ***Computation of Easter Sunday by Java Programming***

The purpose of the project is to acquaint the student with the JAVA programming language. JAVA is becoming the most dominant language because it is platform independent, it can run applications in the internet, its virtual machine can easily download a compiled program and run it and it supports object-oriented programming.

Author/Presenter: Dr. Spyros Andreou ---- Savannah State University
Author: Dr. Jonathan Lambright ---- Savannah State University
Author: Dr. Alvita Williams ---- Savannah State University

2011 Hawaii University International Conferences on Mathematics and Engineering

Monday - 06/13/2011

Time: 10:00-11:30AM   Room: Pakalana

Session: Engineering-Mechanical
Session Chair: Dr. Nashwan T. Younis

1. Title: ***Strain Gage Backing Effects on Measuring Steep Strain Gradient***

Electric strain gages have been used to obtain average extensional strain over a given gage length since the 1930s. However, the literature regarding the inherent uncertainty in a gradient strain measurement is scarce. The resistive gages are produced as flat foils by printed circuit techniques, in the form of a grid on a plastic backing. The novelty of this research program is to examine the manufacturing of the strain gage by modeling the behavior of the gage. The principal sources of error that influence the measurement of stress concentration factors are studied. Recommendations for manufacturing strain gages for high strain gradient measurements are made.
Author/Presenter: Dr. Nashwan T.Younis ---- Indiana University, Purdue University Fort Wayne
Author: Dr. B. Kang ---- Indiana University – Purdue University Fort Wayne

2. Title: ***Simulation of Single and Two Phase Newtonian Flow in Carbon Capture and Storage Processes Using Variational Methods***

In this study, the variational solutions for single and two-phase Newtonian flow velocity in angular pores were validated for special geometries whose analytical solutions are known. The variational approach was validated for one and two parameters test functions in both cases. These solutions resulted in accurate predictions of flux and hydraulic conductance through the porous spaces. The results of this study indicate that this technique can potentially be applied for non-Newtonian or multiphase flow, and in flow domains with irregular geometries. This provides a powerful technique to for pore-scale network modeling of Carbon Sequestration reservoir flow.

Author: Mr. Fan Chen ---- University of Texas, El Paso
Author: Dr. Paul Delgado ---- University of Texas, El Paso
Author/Presenter: Dr. Vinod Kumar ---- University of Texas, El Paso
Author: Mr. Nithin Kavoori ---- University of Texas, El Paso
Author: Dr. Chris Harris ---- University of Texas, El Paso

Monday 06/13/2011

Time: 10:00-11:30AM   Room: Ilima

Session: Engineering-Biomedical, Technology, Mechatronics, Automation, Industrial,

Session Chair: Dr. Edmond Richer

1. Title: *Dynamic Magnetorheological Damper for Orthotic Tremor Suppression*

This paper explores the design methodology and effectiveness of small-scale magnetorheological dampers (MRDs)in applications that require rapidly variable damping.

Author: Dr. David Case --- Southern Methodist University
Author: Dr. Behzad Taheri ---- Southern Methodist University
Author/Presenter: Dr. Edmond Richer ---- Southern Methodist University

2. Title: *Compare Fuzzy Interpolation Algorithm with Other Interpolation Methods Used in Industrial Applications*

A novel interpolation algorithm, fuzzy interpolation, is presented and compared with other popular interpolation methods widely implemented in industrial and manufacturing applications. Different interpolation algorithms have been developed, reported and implemented in many industrial applications in recent years.

Author: Dr. Gerald Agbegha ---- Johnson C. Smith University, Charlotte
Author: Dr. Neilong Guo ---- Johnson C. Smith University, Charlotte
Author/Presenter: Dr. Ying Bai ---- Johnson C. Smith University, Charlotte

3. Title: *Forecasting Model for Measuring Clinical Outcomes and Cost Effectiveness of Using the AutoAmbulator Rehab Technology*

This study evaluates the effectiveness of producing the desired clinical outcomes, based on FIM (Functional Independence Measure) scores, patients' length of stay and financial profitability, for patients using the AutoAmbulator compared to those who do not use at a specific hospital.

Author/Presenter: Dr. Eui Park---- North Carolina A&T State University
Author: Dr. Silvanus Udoka ---- North Carolina A&T State University
Author: Dr. Marvin Rothwell ---- North Carolina A&T State University

Monday - 06/13/2011

Time: 1:00-2:30PM   Room: Carnation

Session: Mathematics-Applied, Computational

Session Chair: Dr. Yucheng Liu

1. Title: *A Numerical Method of Solving Volterra Integral Equation*

A numerical method is presented in this paper to solve linear Volterra integral equations of the second kind. In this proposed method, orthogonal Legendre polynomials are employed to approximate a solution for an unknown function in the Volterra integral equation and convert the equation to system of linear algebraic equations.

Author/Presenter: Dr. Yucheng Liu ---- University of Louisiana at Lafayette

2. Title: *Optimal Control of Complex Economic Phenomena*

Global competition and the increasing sophistication of manufacturing technologies have combine to create a need for the development of control models to describe the complex economic phenomena generated by these influences.

Author/Presenter: Dr. Ellina Grigorieva ---- Texas Woman's University
Author: Dr. Evgenii Khailov ---- Moscow State Lomonosov University, Russia

3. Title: *Mathematical Problems Arising in Chemical Enhance Oil Recovery*

In this talk we will describe several applied problems arising from modeling of enhanced oil recovery. Design of efficient chemical enhanced oil recovery processes often requires injection of fluids with different properties, some laden with chemical such as polymer, surfactant etc, in succession.

Author/Presenter: Dr. Prabir Daripa ---- Texas A&M University

Monday - 06/13/2011

Time: 1:00-2:30PM   Room: Plumeria

Session: Mathematics-Education

Session Chair: Dr. Michael J. Simmers

1. Title: *It's Not the Math They Hate*

Mathematics needs a public relations makeover. Perceptions need to be remolded. Hard and difficult are figments of one's psyche. Mathematics can be viewed as an intellectual game (chess), an opportunity to question, explore, have fun, and get excited. Wrong answers are a path to learning and an opportunity to "play the game" again and again.

Author/Presenter: Dr. Michael J. Simmers ---- University of Wisconsin-Stevens Point

2. Title: *Online Homework in Freshman Level Algebra Courses: Results and Analysis after One Year*

The purpose of this study is to determine if online homework assignments using WebAssign will lead to an increase in academic performance in those freshman level algebra courses. This paper will present the findings after one year of WebAssign implementation.

Author/Presenter: Dr. Amy Franklin, ---- Jacksonville State University

3. Title: *Listening to Children doing Math*

Teacher preparation programs are likely to have perspective elementary teachers visit classrooms to observe mathematics lessons and help individual students with their work. The programs may also have courses in which common elementary student errors are explored.

Author/Presenter: Dr. Adele M. Miller, ---- Central Connecticut State University

Monday - 06/13/2011

Time: 1:00-2:30PM   Room: Pakalana

Session: Mathematics-Discrete, Statistics

Session Chair: Dr. David J. Marchette

1. Title: *Detection and Estimation of Inhomogeneous Regions in Communications Graphs*

We discuss the problem of detecting inhomogeneities in communications graphs: detecting a small number of vertices who are communicating at a higher rate amongst themselves than is typical in the rest of the graph.

Author/Presenter: Dr. David J. Marchette ---- Naval Surface Warfare Center. Dahlgren
Author: Dr. Carey E. Priebe ---- Johns Hopkins University
Author: Dr. Glen A. Coppersmith ---- Johns Hopkins University

2. Title: *Monte Carlo Evaluation of Consistency and Normality of Dichotomous Logistic and Multinomial Logistic Regression Models*

The dichotomous logistic regression model is one of the popular mathematical models for the analysis of binary data with applications in physical, biomedical, and behavioral sciences, among others. The feature of this model is to quantify the effects of several explanatory variables on one dichotomous outcome variable.

Author/Presenter: Dr. Naima Shifa ---- DePauw University
Author: Dr. Mamunur Rashid ---- Indiana University-Purdue University Indianapolis

3. Title: *Confidence Intervals on Generalizability Coefficients for Three-Way Mixed Models and Simulation Study*

Generalizability coefficients, Intraclass correlation coefficient, ANOVA, random effects model, mixed model

Author/Presenter: Dr. Hong Zhou ---- Arkansas State University
Author: Dr. Shauna Leonard ---- Lake Cormorant High School
Author: Dr. Debra Ingram ---- Arkansas State University

Monday - 06/13/2011

Time: 1:00-2:30PM   Room: Ilima

Session: Engineering-Wireless Communications

Session Chair: Dr. Daniel Bukofzer

1. Title: ***Statistical Models for the Wireless Multipath Random Channel***

 A theory developed for modeling communication channels as random processes [1] is used here to develop a statistical approach for characterizing propagation effects in wireless environments where multipath is a prevalent phenomenon affecting transmitted signals. This effort, which extends traditional methodologies [2] as well as work on signal detection algorithms in random channel propagation [3], models the amplitude scaling factors and path delays as random variables which in turn are used to evaluate statistical descriptors of the channel in the time domain (mean and autocorrelation function) and in the frequency domain by a function akin to the transfer function of a linear filter. Statistical models for the amplitude scaling factors and path delays are proposed and used to exemplify the procedure used to statistically characterize a multipath random channel.

Author/Presenter: Dr. Daniel Bukofzer ---- California State University - Fresno

2. Title: ***Random Channel Modeling in Communication Systems Analysis and Design***

 A theory for modeling channels as random processes impulse response is presented and applied to the analysis of communication systems. Channels are characterized statistically via probability density functions of describing parameters that yield the channel mean and autocorrelation function as well as spectrally via the equivalent of a transfer function. Generalized channel input/output relationships are derived for random process input models. A generalization of the classical result applicable to deterministic channel models via an impulse response is obtained and applied to representative examples in communications engineering [1].

Author/Presenter: Dr. Daniel Bukofzer ---- California State University - Fresno

Monday - 06/13/2011

Time: 2:45-4:15PM   Room: Carnation

Session: Mathematics Workshop-Education, Algebra

Session Chair: Mrs. Sue Martinez

1. Title: ***The Influence of Manipulatives on Students' Understanding of Advanced Algebra Concepts***

"Play is the highest form of research." Albert Einstein understood that learning should be more interactive than just participating in a lecture. One way independent explorations are achieved is by employing manipulatives, objects that are touched, moved, or "manipulated". Research shows that extensive use of manipulatives help preschool and elementary school students learn by experience. The purpose of this paper is to examine if the influence on students' achievement and attitudes while learning more advanced Algebraic concepts such as sets, inequalities, graphs, and 3-dimensional visualizations is constructive through manipulative based activities. Twenty-three Intermediate Algebra students participated in the study at the California State University, Channel Islands, Fall Semester 2010. These students were already familiar with some of the topics as they passed an Intermediate Algebra class while in high school. However, the entrance exam scores for this group were below the college standard, hence, they were required to enroll in an Intermediate Algebra class to improve their understanding of mathematics.

Author/Presenter: Mrs. Sue Martinez ---- California State University at Channel Islands
Author: Dr. Ivona Grzegorczyk ---- California State University at Channel Islands

Monday - 06/13/2011

Time: 2:45-4:15PM   Room: Pakalana

Session: Engineering Workshop - Low Power VLSI Design

Session Chair: Dr. Scott C. Smith

1. Title: ***Ultra-Low Power Asynchronous Digital Circuits***

This workshop will provide an introduction to asynchronous logic, NULL Convention Logic (NCL), and Multi-Threshold CMOS (MTCMOS), and then detail how the MTCMOS technique is combined with NCL to yield a fast ultra-low power asynchronous circuit design methodology, called Multi-Threshold NULL Convention Logic (MTNCL), which vastly outperforms traditional NCL in all aspects (i.e., area, speed, energy, and leakage power), and significantly outperforms the MTCMOS synchronous architecture in terms of area, energy, and leakage power, although the MTCMOS synchronous design can operate faster.

Participants need not have any prior knowledge of asynchronous circuit design, but should be familiar with basic logic design concepts, such as Boolean algebra, Karnaugh maps, and transistor-level digital design. At the end of this workshop, participants will be familiar with the advantages of asynchronous circuits, the power challenges facing the semiconductor industry, and the challenges to asynchronous design being integrated into the mainstream semiconductor design industry, and will know how to design ultra-low power MTNCL circuits and systems.

Author/Presenter: Dr. Scott C. Smith **----** University of Arkansas
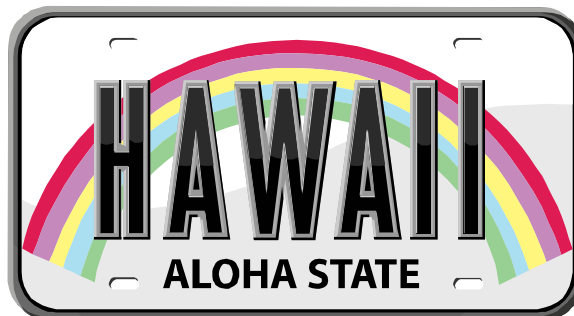
Tuesday - 06/14/2011

Time: 8:15-9:45AM   Room: Carnation

Session: Areas Mathematics/Complex Dynamics
            Mathematics-Korevaar Classes, Composition Product, Weierstrass Transform, and
            Riemann Hypothesis

Session Chair: Dr. Daniel Gefroh

1. Title: ***The Composition Product on Korevaar Classes of Entire Functions***

A product structure, termed the composition product, is defined on classes of entire functions
that are uniformly approximated on compacta by polynomials with zeros restricted to closed half
planes, referred to as Korevaar classes. This compostion product is a parametric extention of a
classic composition product defined on the Laguerre-Polya class by NG de Bruijn, and is defined
on the Korevaar classes. Applications of the composition product are given to the Weierstrass
transform, Laplace integrals, and the Riemann hypothesis.

Author/Presenter: Dr. Daniel Gefroh ---- Hawaii Pacific University

2. Title: ***Dynamic Planes of Tangent-like Meromorphic Functions***

The theory of iterated transcendental functions and entire functions has been extensively studied
in the past two decades. In particular, the dynamical planes of exponential function and tangent
function have garnered much attention. In this paper, we study the relationship between the
dynamical planes of these two families. We investigate the family of meromorphic functions
with two asymptotic values, which we call tangent-like functions. We show that there is
dynamical convergence of tangent-like functions to the exponential function.

Author/Presenter: Dr. Shenglan Yuan ---- LaGuardia Community College of the City University
of New York

Tuesday - 06/14/2011

Time: 8:15-9:45AM   Room: Plumeria

Session: Mathematics- Topology, Geometry, Education

Session Chair: Dr. Ioan Hrinca

1. Title: ***On the Erlanger Programm of Felix Kline***

This presentation is about the unifying treatment of modern geometries through c*ongruence.* Under the Erlanger Programm, *congruence* precedes *measurement.* Geometry begins with a naked set without axioms and any idea of measurement. All it comes with is congruence, that is, a certain way is given to tell when two subsets of the given set are congruent. And as surprising it can be, a particular measurement (length or area, for example) it is then introduced and studied only if it is proved in advance that it yields equal results when applied to congruent figures. I will make a point on how much time to spend with students on Complex numbers and geometric transformations, the must have ingredients here. Various geometries will be introduced and particular measurements will be discussed. But more importantly I will address issues that are true here and false there, and how to decide whether a certain statement is Euclidean or non-Euclidean in nature.

Author/Presenter: Dr. Ioan Hrinca ---- Otterbein University, Westerville

2. Title: ***Nonorientable Contact Structures on 3-Manifolds***

There is an increasing number of interactions between topology and engineering. Contact geometry is naturally related to dynamical systems, optics, and hydrodynamics. In this talk, we will get introduced to the world of contact geometry. Contact structures on 3-dimensional manifolds are smooth distributions of planes which are nowhere integrable. Contact structures carry important topological information on the ambient manifold. There is a dichotomy between tight and overtwisted contact structures in dimension three. A contact structure on a 3-manifold is overtwisted if there exists an embedded disk which is tangent to the contact planes everywhere along is boundary. A contact structure is tight if it is not overtwisted.

Author/Presenter: Dr. David Crombecque ---- Gettysburg College

Tuesday - 06/14/2011

Time: 8:15-9:45AM   Room: Pakalana

Session: Mathematics- Number Theory

Session Chair: Dr. Mulatu Lemma

1. Title: ***The Fascinating Mathematical Beauty of the Fibonacci Numbers***

The Fibonacci numbers are sequences of numbers of the form: **0,1,1,2,3,5,8,13,...** Among numerical sequences, the Fibonacci numbers *F* have achieved a kind of celebrity status. These numbers are famous for possessing wonderful and amazing mathematical properties. Mathematicians have been fascinated for centuries by the properties and patterns of Fibonacci numbers.

Author/Presenter: Dr. Mulatu Lemma ---- Savannah State University

2011 Hawaii University International Conferences on Mathematics and Engineering

Tuesday - 06/14/2011

Time: 8:15-9:45AM   Room: Ilima

Session: Engineering-Biomedical, Technology, Industrial, Technology

Session Chair: Dr. Jessica Buck

1. Title: ***The Effect of Single-Dose Spinal SRS on Ultrasound Propagation Velocity in Porcine Vertebral Bone***

Clinical radiation dose prescriptions for spinal radiosurgery have been escalated to levels currently accepted in intracranial radiosurgery with the expectation of increasing the durability of tumor control in the spinal column and reducing tumor induced paralysis and pain. Nevertheless, the maximum single-dose radiation treatment a vertebra can tolerate without loss of structural integrity is still unknown and may be exceeded in current prescriptions. The recent increase in dosage has correlated with a rise in late onset vertebral fractures. In this study four Yucatan Minipigs were administered 16 Gy or 18 Gy of radiation using stereotactic radiosurgery (SRS) from their fourth to their seventh cervical vertebra, parallel with the spine and focused on half of the vertebral body. One year after SRS, samples of the irradiated and non-radiated vertebrae were obtained and ultrasound propagation velocity, an indicator of bone elasticity, was measured in the axial and transverse directions. The results show a marked decrease in the ultrasound velocity as well as in the estimated elastic modulus in the radiated samples. Ultrasound propagation velocity and elastic modulus may be effective indicators of bone toxicity following irradiation.

Author: Dr. Julie E Pollard ---- Southern Methodist University
Author: Dr. Jessica Steinmann-Hermsen ---- Southern Methodist University
Author: Dr. Paul M. Medin ---- UT Southwestern Medical Center at Dallas
Author/Presenter: Dr. Edmond Richer ---- Southern Methodist University

2. Title: *Emergency Management: Technological Innovations Standing at the Vanguard*

This paper examines the types of emergency, crisis, or incidents that have impacted the international and national general public and college communities. This paper also describes some of the technologies that help to reduce or alleviate potential hazards. The potential hazards or disasters are identified as man-made or natural.

Author/Presenter: Dr. Jessica L. Buck ---- Jackson State University
Author: Ms. Jacqueline Humphrey ---- Jackson State University

3. Title: *Lean Six Sigma Application in Public Health Clinics*

This paper we present the results of a Lean Six Sigma project applied to improve the operational flow in clinics within Guilford County Department of Public Health, located in Greensboro, NC.

Author/Presenter: Dr. Silvanus J. Udoka--- North Carolina A&T State University
Author: Dr. Eui H. Park ---- North Carolina A&T State University
Author: Dr. Patricia Banks ---- North Carolina A&T State University

4. Title: *Clinical Decision Making and Intuitive Judgment in the Trauma Center Environments*

Recent advances in computer technology and a growing number of available simulation tools provide immeasurable contributions to clinical decision making processes. However, the increasing complexity of trauma center systems makes decision-making and problem-solving process complex.

Author/Presenter: Dr. Eui Park ---- North Carolina A&T State University
Author: Dr. Policarpo DeMattos ---- North Carolina A&T State University
Author: Dr. Daniel Miller ---- North Carolina A&T State University
Author: Dr. Younho Seong ---- North Carolina A&T State University

Tuesday - 06/14/2011

Time: 10:00-11:30AM   Room: Carnation

Session: Mathematics-Applied

Session Chair: Dr. Lisa L. Kovalchick

1. Title: ***Broadcasting in Cycles with a Single Chord***

This paper discusses the dissemination of information in a communication network. Specifically, we use a cycle to model the communication network.   We discuss the potential benefit of inserting a chord into the cycle in order to increase the rate of dissemination and present an algorithm for disseminating information in such a graph, using a technique known as broadcasting.

Author/Presenter: Dr. Lisa L. Kovalchick ---- California University of Pennsylvania

2. Title: ***Mathematical Modeling of Cooperative Systems***

Cooperative systems, where entities work together to achieve a common goal, are becoming important elements of our information society. What makes cooperative systems effective? What are the metrics for such a system? Can better structures and processes enhance cooperation and optimize systems? This presentation uses the emerging mathematical and game theory framework of subset team games, which provides a model for the principles, relationships, and metrics of cooperative phenomena.

Author/Presenter: Dr. Chris Arney ---- United States Military Academy, West Point
Author: Dr. Elisha Peterson ---- United States Military Academy, West Point

3. Title: ***Random Attractors of a Class of Stochastic Wave Equations on Unbounded Domain***

We study the asymptotic behavior of a class of stochastic wave equations defined on unbounded domains. We show that the equation has a random attractor which pullback attracts all solutions. We also prove the upper semicontinuity of the random attractors when a small parameter approaches zero. These results are obtained by establishing the uniform pullback estimates on the tails of solutions for large space and time variables

Author/Presenter: Dr. Bixiang Wang ---- New Mexico Institute of Mining and Technology

Tuesday - 06/14/2011

Time: 10:00-11:30AM   Room: Plumeria

Session: Mathematics-Applied, Discrete

Session Chair: Dr. John J. Lattanzio

1. Title: *Generalized Matrix Graphs and Completely Independent Critical Cliques*

A k-dimensional n-square matrix is defined and certain properties of such matrices are investigated. Two particular graph constructions involving k-dimensional n-square matrices are given and the graphs so constructed are called matrix graphs. Properties of matrix graphs are determined and an application of matrix graphs to completely independent critical clique is provided..

Author/Presenter: Dr. John J. Lattanzio ---- Indiana University of Pennsylvania
Author: Dr. Quan Zheng ---- Indiana University of Pennsylvania

2. Title: *Neighborhood Homogeneous Labelings of Graphs*

Graphs in which all vertices have the same degree (regular graphs) can be thought of as being homogeneous - all vertices "look the same" from the perspective of vertex degree.

Author/Presenter: Dr. David J. Marchette ---- Naval Surface Warfare Center, Dahlgren
Author: Dr. Sul-Young Choi ---- Le Moyne College
Author: Dr. Andrey Rukhin ---- Naval Surface Warfare Center
Author: Dr Carey E. Priebe ---- Johns Hopkins University

3. Title: *Periodic Eigenfunctions of the Fourier Transform Operator*

Let the generalized function (tempered distribution) f on R be a p-periodic eigenfunction of the Fourier transform operator F.

Author/Presenter: Dr. Comlan de Souza ---- California State University, Fresno
Author: Dr. David W. Kammler ---- Southern Illinois University

Tuesday - 06/14/2011

Time: 10:00-11:30AM   Room: Pakalana

Session: Engineering-Material Science,

Session Chair: Dr. David Elam

1. Title: **_Structural and Photoluminescence Properties of ALD Zinc Oxide Thin Films_**

In this paper, we report structural and optical properties of ZnO thin films grown on single crystal ZnO substrates by means of Atomic Layer Deposition (ALD).

Author/Presenter: Dr. David Elam ---- University of Texas San Antonio
Author: Dr. Anastasiia Nemashkalo ---- Texas Christian University, Forthworth
Author: Dr. Yuri Strzhemechny ---- Texas Christian University, Forthworth
Author: Dr. Chonglin Chen ---- University of Texas San Antonio
Author: Dr. Arturo Ayon ---- University of Texas San Antonio
Author: Dr. Andrey Chabanov ---- University of Texas San Antonio

2. Title: **_Improving Newly Developed Concrete Material_**

There is a real need for a fundamental understanding of bond and bond mechanisms in the newly developed very-high-strength-concrete (VHSC) materials.

Author/Presenter: Dr. Taher Abu-Lebdeh ---- North Carolina A&T State University
Author: Dr. Sameer Hamoush ---- North Carolina A&T State University

3. Title: **_Experimental Comparison of Woven- and Uniaxial Plied- Carbon Epoxy Composites_**

Composite materials are becoming increasingly popular due to their unique blend of properties, including very high specific stiffness and strength. Woven composites have been the subject of recent study because of their increased through-thickness strength and stiffness when compared to traditional plied composites.

Author/Presenter: Dr. Ravin Kumar ---- California State Polytechnic University, Pomona
Author: Dr. Mehrdad Haghi ---- California State Polytechnic University, Pomona

Tuesday - 06/14/2011

Time: 10:00-11:30AM   Room: Ilima

Session: Engineering- Bioinformatics, Optimization Technologies

Session Chair: Dr. Duc T. Nguyen

1. Title: ***Dynamic Programming Algorithm and Software in Parallel Computer Environment with Application Computational Biology***

The maximum score and the "best alignments" between the user's input DNA sequences and the large database for existing DNA sequences is conducted in this study.

Author/Presenter: Dr. Duc T. Nguyen ---- Old Dominion University
Author: Dr. Siroj Tungkahotara, ---- INCA Engineers, Inc.
Author: Dr. Eric N.D. Nguyen ---- Virginia Commonwealth University
Author: Dr. Don N. Nguyen ---- Virginia Commonwealth University
Author: Dr. A.L. Ninh ---- The University of Florida

2. Title: ***An Approach to Enhance an Economical COTS FCS for UAV***

In this paper, the process of developing a Flight Control System (FCS) by using an economical Commercial-Off-The-Shelf (COTS) solution will be discussed. The approaches and methods of incorporating advanced features onto an inexpensive but fundamental FCS will be evaluated.

Author: Ms. Shing Chi Chan ---- California State University Los Angeles
Author/Presenter: Ms. Adrienne Lam ---- California State University Los Angeles
Faculty Mentor: Dr. Chivey Wu ---- California State University Los Angeles
Faculty Mentor: Dr. Khosrow Rad ---- California State University Los Angeles
Faculty Mentor: Dr. Helen Boussalis ---- California State University Los Angeles

Tuesday - 06/14/2011

Time: 1:00 -2:30PM   Room: Carnation

Poster Session: Mathematics and Engineering

Session Chair: Dr. Guoqing Wu

1. Title: ***Secure Multimedia Multicast Service for Multi-homed   Mobile Terminals Using FI-Based One-time Pad Group Key***

Wireless, Cryptography, Applied Mathematics

Author: Dr. Jinsul Baek ---- Winston-Salem State University
Author: Dr. Pual Fisher ---- Winston-Salem State University
Author/Presenter: Dr. John O. Adeyeye ---- Winston-Salem State University

2. Title: ***Modeling a Monolithic Silicon Carbide Pintle Rocket Injector***

Mechatronics/MEMS/NEMS/Robotics/Automation

 Author/Presenter: Dr. Dylan Ginn ---- University of Texas at San Antonio
 Author: Dr. Arturo A Ayon ---- University of Texas at San Antonio

3. Title: ***Synthesis of a High Quality Electron-doped High Temperature Superconductor Eu1.85Ce0.15CuO4-y***

 Materials Science and Engineering

Author/Presenter: Mr. William Nelson ---- University of West Florida
Author: Mr. Branwyn Holmes ---- University of West Florida
Author: Mr. Sean Heffernan ---- University of West Florida
Author: Mr. Neil Baumann ---- University of West Florida
Author: Mr. Christopher Weckerly ---- University of West Florida
Author: Dr. Guoqing Wu ---- University of West Florida

4. Title: ***The Creation of 14 Mathematics, Science, and Technology Centers for the Pennsylvania State System Of Higher Education Universities Funded By A National Science Foundation Collaborative For Excellence Grant***

Education Technology, Inter-disciplinary Areas of Mathematics, Mathematics Education

Author: Dr. Denine Burkett ---- Lock Haven University of Pennsylvania

5. Title: ***NSF US-China IRES: Undergraduate Research on Semiconductor Device Fabrication***

Engineering/Current Trends in Semiconductor Devices

Author: Mr. Cody Lewis ---- University of California, Riverside
Author: Mr. David Dai ---- University of California, Riverside
Author: Mr. Isaac Lomeli ---- University of California, Riverside
Author: Ms. Rosemblim Lugo ---- University of California, Riverside
Faculty Advisor: Dr. Albert Wang ---- University of California, Riverside

6. Title: ***A Scalable, Optimized Architecture for Implementing Convolutional Interleavers in FPGAs***

Programming and Logic Devices

Author: Dr. T.R. Dean ---- United States Military Academy, West Point
 Author: Dr. A.A. Lim ---- United States Military Academy, West Point
Author: Dr. S.S. Hamilton ---- United States Military Academy, West Point

7. Title: ***Analysis of Tungsten Oxide Thin Films – A Spectroscopic Investigation***

Spectroscopy, Materials Engineering

Author: Dr. Felicia S. Manciu ---- University of Texas at El Paso
Author: Dr. William G. Durrer ---- University of Texas at El Paso
Author/Presenter: Dr. Jose L. Enriquez ---- University of Texas at El Paso
Author: Dr. Young Yun ---- University of Texas at El Paso

8. Title: ***Degradation of Polylactic Acid Used in Food-Related Consumer Products Under Humid and Dry Environmental Conditions***

Material Science and Engineering

Author: Ms. Corinna Ellis ---- Worcester Polytechnic Institute
Author/Presenter: Ms. Emily Kreek ---- Worcester Polytechnic Institute
Advisor: Dr. Satya Shivkumar ---- Worcester Polytechnic Institute

9. Title: ***Heat Transfer Analysis of Dry Sliding Friction at a Polymer-Metal Interface***

Material Science and Engineering

Author/Presenter: Dr. Jamal A. Ghorieshi ---- Wilkes University, Wilkes-Barre

10. Title: ***Maximum Product of Spacings Method for Multivariate Skew Normal Model***

Author/Presenter: Dr. Arjun K.Gupta ---- Bowling Green State University

11. Title: ***Electromagnetic Interference Shielding Effectiveness of Metallic Thin Films on Carbon Nanofiber Reinforced High Density Polyethylene and Styrene Butadiene Copolymer***

Materials Science and Engineering

Author: Ms. Alma Perez ---- University of Texas Pan American, Edinburg
Author: Mr. Takashi Shimizu ---- University of Texas Pan American, Edinburg
Author: Mr. Garcia Horus ---- University of Texas Pan American, Edinburg
Author: Dr. Lozano Karen ---- University of Texas Pan American, Edinburg
Author/Presenter: Dr. Dorina Mihut ---- University of Texas Pan American, Edinburg

12. Title: ***Social Influences of Project Management - Employee Motivation in Project Management***

Professional Project Management

Author/Presenter: Bandar Alkhayyal ---- Eastern Michigan University/ The Ministry of Higher Education, Kingdom of Saudi Arabia

13. Title: ***Remarks on Strong Regular Reflection for the Isentropic Gas Dynamics Equations***

Applied Mathematics

Author/Presenter: Dr. Katarina Jegdic ---- University of Houston, Downtown

14. Title: ***Some Extensions on the H^k Mean Curvature Flow***

Differential Geometry

Author/Presenter: Dr. Yi Li ---- Harvard University

15. Title: ***Isotropic Tensor Identities as the Foundation of many Algebraic Relations***

Algebra

Author: Dr. J. F. Mahoney ---- University of Florida, Gainesville
Author/Presenter: Dr. S. Yeralan ---- University of Florida Polytechnic, Lakeland

16. Title: ***Design of a Labview Controlled Automatic Measurement and Data Taken System***

 Education Technology

Author/Presenter: Mr. Branwyn Holmes ---- University of West Florida
Author: Mr. William Nelson ---- University of West Florida
Author: Mr. Sean Heffernan ---- University of West Florida
Author: Mr. Neil Baumann ---- University of West Florida
Author: Mr. Christopher Weckerly ---- University of West Florida
Author: Dr. Guoqing Wu ---- University of West Florida

17. Title: ***Bounded Category of an Exact Category***

Algebraic Topology

Author/Presenter: Seshendra Pallekonda ---- King's College

Tuesday - 06/14/2011

Time: 1:00-2:30PM   Room: Ilima

Session: Mathematics Workshop - Algebra and Technology

Session Chair: Dr Demetria White

1. Title: *Increasing Student Engagement: Course Redesign using the Hawkes Learning Systems*

Innovation in the classroom and implementation of technology in mathematics are proven practices to promote student success. Hawkes Learning Systems' unique approach to mastery learning provides the software solution to motivate your students. The mathematics faculty at Tougaloo College has selected the Hawkes Learning System to 1) Motivate student to learn mathematics by "doing the math", 2) Increase the quality instruction to students at all levels of earning, 3) Increase the quality of the contact time between students and instructors, 4) To insure consistency in courses.

Author/Presenter: Dr Demetria White ---- Tougaloo College, Mississippi
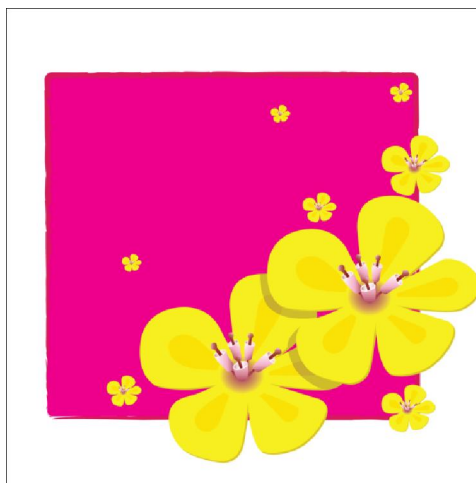
Tuesday - 06/14/2011

Time: 2:45-4:15PM   Room: Pakalana

Session: Mathematics

Session Chair: Dr. Randy Goldman

1. Title: ***Formal Syntax and Semantics for Third Order Modal Logic with Property Abstraction Operator: Proof of Completeness for Faithful Models***

Gödel's Ontological Argument is distinctive because it is the most sophisticated and formal of ontological arguments and relies heavily on the notion of *positive property*. This is a primitive of the system. He uses a third-order modal logic with a property abstraction operator and property quantification into modal contexts. Gödel describes *positive property* as "independent of the accidental structure of the world"; "pure attribution," as opposed to privation; "positive in the 'moral aesthetic sense.'" *Pure attribution* seems likely to be related to the Leibnizian concept of perfection.

Author/Presenter: Dr. Randy Goldman ---- Hawaii Pacific University

Tuesday - 06/14/2011

Time: 2:45-4:15PM   Room: Ilima

Session: Engineering-Industrial, Management, Educational Technology

Session Chair: Dr. Salam N. Salloum

1. Title: ***A Dynamic Programming Algorithm for Constructing an Optimal Diagnostic Procedure for Coherent Systems***

Optimal diagnostic procedure for coherent systems has been used to model the problem of efficient diagnosis of systems with redundant components for critical applications. Also, this model has been used to model other problems in reliability analysis, information retrieval systems, management science, medical diagnosis, and data mining (classification).

Author/Presenter: Dr. Salam N. Salloum ---- California State Polytechnic University Pomona

2. Title: ***The Expansion of Charlotte Airport (CLT) as a Potential Hub for Foreign Trade Activity***

This paper looks at the development of the Charlotte Douglas International Airport from a hub used primarily for passenger traffic into a major intermodal hub for commercial freight in support of foreign trade activity. The paper examines the required infrastructure, facility, and transportation changes the airport and surrounding area would need to undergo, the environmental impact such changes would have, and the economic impact of implementing this type of development would have on the Charlotte-Mecklenburg region.

Author/Presenter: Dr. Derrek B. Dunn ---- Savannah State University
Author: Dr. Deidre E. Paris ---- Savannah State University
Author: Dr. Dewayne Brown ---- North Carolina A & T State University

3. Title: *Engaged Learning with a Technology Presence: Bridging the Gap between Classroom Theory and Professional Experience to Fulfill Societal Needs*

Engaged/ Experiential Learning is an educational strategy that allows classroom skills and knowledge into practice while serving the community. It combines civic involvement with academic coursework in a manner that benefits both the student and the community. Engaged Learning promotes a community partnership while course objectives are met, students turn classroom theory into practice and gain professional experience, and a pertinent community need is fulfilled.

Author/Presenter: Dr. Jessica L. Buck ---- Jackson State University
Author: Ms. Bertiel Harris ---- Jackson State University
Author: Ms. Sherrie Conley ---- Jackson State University

4. Title: *An Augmented Reality Based Modeling Environment to Evaluate a User-Centered Multimodal Human Machine Interface Design*

In this paper, we present a multimodal design space for a hydraulic excavator testbed, developed using a User-Centered Design framework. The design space allows us to explore sets of modality combinations out of which we are able to develop experimentally validated user-friendly multimodal interface solutions. We incorporate Augmented Reality in the test platform to access each design for adequacy in order to enable us to determine which modalities must be represented and how best they can be integrated to enable improved performance by the human operator.

Author: Dr. Joseph Akyeampong ---- North Carolina A&T State University
Author/Presenter: Dr. Silvanus J. Udoka ---- North Carolina A&T State University
Author: Dr. Eui H. Park ---- North Carolina A&T State University

Wednesday - 06/15/2011

Time: 8:15 -9:45AM   Room: Carnation

Session: Mathematics-Applied, Computational

Session Chair: Dr. David C. Arney

1. Title: *Mathematical Modeling in Network Science*

This presentation uses a mathematical modeling framework to measure such networks' performances in several different ways. Traditional approaches to social network analysis are often performed either by studying individual nodes or by studying the graph as a whole.

Author/Presenter: Dr. Chris Arney ---- United States Military Academy, West Point
Author: Dr. Elisha Peterson ---- United States Military Academy, West Point

2. Title: *A Numerical Method of Solving Nonlinear Differential Difference Equations*

This paper presents a method of solving the nonlinear differential difference equations (NDDEs) using He's variational iteration method. In this study, typical nonlinear differential difference equations…

Author/Presenter: Dr. Yucheng Liu ---- University of Louisiana at Lafayette

3. Title: *Modeling Bee Pollination of Almond Orchards with Cross- and Self-Diffusion*

Using the spectral-Galerkin method in a rectangular domain, we numerically solve the 2D nonlinear parabolic PDE and examine the result of varying the parameters.

Author/Presenter: Kamuela E. Yong ---- The University of Iowa
Author: Yi Li ---- The University of Iowa
Author: Stephen D. Hendrix ---- The University of Iowa

Wednesday - 06/15/2011

Time: 8:15 -9:45AM   Room: Plumeria

Session: Mathematics-Education. Inter-disciplinary Areas, Technology,

Session Chair: Dr. Irina A. Chernikova

1. Title: *"Mathematicing" and Writing Across the Engineering Curriculum*

We will describe the process of collaboration between administration and faculty in mathematics, engineering, and English to incorporate a data analysis component in a course called Technical Report Writing (TRW) and, ultimately, our plans to integrate mathematics in other humanities courses.

Author/Presenter: Dr. Irina A. Chernikova ---- The University of Akron
Author: Dr. Michael F. Johanyak ---- The University of Akron
Author: Dr. Sheldon B. Wrice ---- The University of Akron

2. Title: *The Effectiveness of Incorporating Web Assign in the Mathematics Curriculum at Historically Black Colleges and Universities*

The purpose of this paper is to discuss how Webassign is used to assign, collect, grade, and record homework assignments via the internet. Professors' experience with Webassign is also discussed.

Author/Presenter: Dr. Deidre E. Paris ---- Savannah State University
Author: Dr. Derrek B. Dunn ---- Savannah State University
Author: Dr. Dewayne Brown ---- North Carolina A & T State University

 3. Title: *"Culture and Service in the Undergraduate Mathematics Curriculum"*

Incorporating aspects of culture and service into the undergraduate mathematics major content courses and degree requirements can strengthen students' appreciation of the power of mathematical thought to affect societal well-being.

Author/Presenter: Dr. Angela Hare ---- Messiah College, Grantham

4. Title: *Using Electronic Reflections to Help Pre-Service Elementary Teachers Learn to Communicate Mathematically*

This paper enumerates the hurdles and multiple benefits of having students write electronic reflections.

Author/Presenter: Dr. Adele M. Miller ---- Central Connecticut State University

Wednesday - 06/15/2011

Time: 8:15 -9:45AM   Room: Pakalana

Session: Mathematics-Calculus

Session Chair: Dr. Haris J. Catrakis

1. Title: *Mathematical Aspects of Level Crossings for Multiscale Functions*

We consider mathematical aspects of level crossings of fluctuating functions with emphasis on spectral and fractal properties. A general approach for relating spectra and fractals is established by combining relations for the power spectrum and for the fractal dimension, respectively, to the probability density function of level crossing scales. These relations indicate that a given power spectrum can be non-uniquely related to different probability density functions of level crossing scales. As an illustrative example of this non-uniqueness, we explore two functions which have the same power-law spectral slope and yet have different level crossing statistics. Implications of this general mathematical approach for turbulent flows are discussed in the context of turbulence theories and observations.

Author/Presenter: Dr. Haris J. Catrakis ---- University of California, Irvine

2. Title: *Exploring the Number e*

The number e is a very important number in mathematics and is equal to 2.718281828459045…. The discovery of the number e led to many discoveries in the sciences and technological developments the humankind enjoys today. While most people are more familiar with the number π, many are unfamiliar with the number e. One of those discoveries is the famous Euler identity $e^{i\pi} + 1 = 0$ involving all five important mathematical numbers (e, π, i, 1, 0) in mathematics. In this work, the number e will be explored showing its history, some applications like compound interest, some of its properties and its approximations. Some identities will be proven in approximating the number e as well as the graphing tool MATLAB will be utilized to graph certain functions like $(1 + 1/x)x \rightarrow e$ as $x \rightarrow \infty$ involving the number e.

Author/Presenter: Dr. Spyros Andreou ---- Savannah State University
Author: Dr. Jonathan Lambright ---- Savannah State University
Author: Dr. Brittany M. Lewis ---- Savannah State University

Wednesday - 06/15/2011

Time: 8:15 -9:45AM   Room: Ilima

Session: Engineering- Spectroscopy, Tissue, Nanotechnology

Session Chair: Dr. Jose L. Enriquez

1. Title: *Spectroscopic characterization of PLLA/PCL Blends as Biodegradable Materials for Tissue Engineering*

In this work we demonstrate the usefulness of confocal Raman mapping spectroscopy for simultaneously measuring local distributions of poly (L-lactic acid) (PLLA) and poly (- caprolactone) (PCL), which are frequently used as biodegradable scaffolds for tissue growth.

Author/Presenter: Dr. Jose L. Enriquez ---- University of Texas at El Paso
Author: Dr. William G. Durrer ---- University of Texas at El Paso
Author: Dr. Tao Xu ---- University of Texas at El Paso
Author: Dr. Felicia S. Manciua ---- University of Texas at El Paso

2. Title: *Characterization of Silver Nanowire Growth in Porous Aluminum Oxide Templates Produced Employing Sulphuric, Oxalic and Phosphoric Acids*

We report the growth of Silver Nanowires with varying diameters in porous anodic aluminum-oxide (AAO) membranes by Electroless deposition approach. This objective was carried out in 2 phases.

Author/Presenter: Dr. Ramakrishna Kotha ---- University of Texas at San Antonio
Author: Dr. Diana Strickland ---- Southwest Research Institute. San Antonio
Author: Dr. Arturo A Ayon ---- University of Texas at San Antonio

Wednesday - 06/15/2011

Time: 10:00-11:30AM   Room: Carnation

Session: Mathematics Workshop-Education, Calculus

Session Chair: Dr. Ellina Grigorieva

1. Title: *"Using Technology to Teach and Solve Challenging Math Problems"*

The author will share her ideas with other educators; she will show how problems involving numbers and proofs develop intellectual skills of students. Going from simple to more complicated you will learn how students in you calculus class can construct and investigate some microeconomic model and even predict the best production or sales strategy that maximizes profit.

Author/Presenter: Dr. Ellina Grigorieva ---- Texas Woman's University
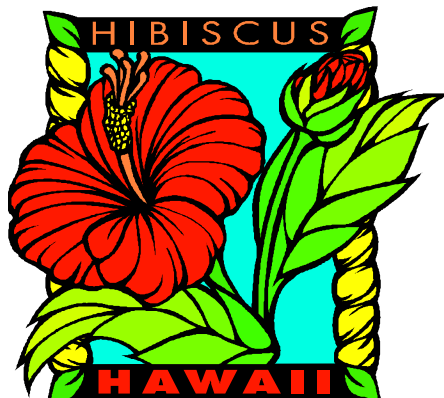
Wednesday - 06/15/2011

Time: 10:00-11:30AM   Room: Plumeria

Session: Mathematics Workshop- Algebra, Technology, Reading

Session Chair: Dr. Demetria White

1. Title: _**Reading and Math Project (RMP) – Integrating Technology in the Classroom**_

The collaborative project is designed to demonstrate the effectiveness of students using critical thinking and analytical reasoning skills in both mathematics and reading. Reading in the content area and problem solving skills in mathematics will be discussed in this campus wide project that has had a lasting impact on faculty and staff over the past two years. Effective teaching strategies have been modeled and shared in campus-wide professional development workshop sessions.

Goal(s): To develop teaching/learning strategies that will enhance critical thinking and analytical reasoning skills through one-on-one consultation services and faculty workshops.

Author/Presenter: Dr. Demetria White ---- Tougaloo College, Mississippi
Author: Dr. Linda Anderson ---- Tougaloo College, Mississippi

Wednesday - 06/15/2011

Time: 10:00-11:30AM   Room: Pakalana

Session: Engineering-Partnership between Academia and Corporate World

Session Chair: Dr. Derrek B. Dunn

1. Title: *Laying the Foundation for a Climate Change Science and Policy Degree Program at a Historically Black*

Savannah State University (SSU), a public historically black university located on the coast of Georgia, has embarked on a strategic direction to establish an interdisciplinary and multidisciplinary Bachelor of Applied Science degree concentration in Climate Change Science and Policy. The proposed SSU Innovations in Global Climate Change Education (IGCCE) work plan lays the foundation for the development of this degree concentration. This plan builds upon and integrates the University's existing environmental sciences program; science, technology, engineering and mathematics (STEM) academic programs; undergraduate and graduate marine sciences program; and computational and geographic information systems capabilities. The Dean of the College of Science and Technology (COST) will lead the proposed program in partnership with North Carolina State University (NCSU.) This strategic partnership will develop and implement a program designed to achieve the **NASA IGCCE Goal 2**: *Increase the number of underrepresented/ underserved undergraduate students prepared for employment and/or to enter graduate school in technical fields relevant to global climate change.*

Author/Presenter: Dr. Derrek B. Dunn ---- Savannah State University
Author: Dr. Deidre E. Paris ---- Savannah State University
Author: Dr. Dewayne Brown ---- North Carolina A & T State University

2. Title: *Chukchi Sea Monitoring Station Conceptual Framework*

Design of the weather station was accomplished as part of a design project for senior Civil Engineering students at the University of Alaska Anchorage where structure of an engineering firm was simulated and a partnership with ConocoPhillips Alaska was utilized.

Author/Presenter: Dr. Osama A. Abaza ---- University of Alaska Anchorage
Author: Dr. John R. Cologgi ---- ConocoPhillips Company
Author: Mr. Jeffery Eide ---- University of Alaska Anchorage
Author: Mr. Alexandra West ---- University of Alaska Anchorage

Kaneohe – Koolau Mountains

Road Side Vendors and Tourist - Kam Highway

Double Rainbows – Kaneohe Koolau Mountains

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ACKNOWLEDGEMENTS

Hawaii University International Conferences would like to thank the following people who have made our 2011 Math & Engineering Conference a success!

KEYNOTE SPEAKER

Thank you ***Dr. Randy Goldman*** for your splendid address to our conference and those attending. Your dedication to your academic endeavors and sharing your knowledge and skills with us is greatly appreciated.

REVIEWERS

We thank the dedicated professionals who reviewed the papers submitted by our conferees to be included in our programs for the conference proceedings. Your work is of the utmost importance to make sure those accepted meet the highest academic standards for presentation.

Dr. David Arney, Dr. Daniela Bargelli, Dr. Daniel Bukofzer, Dr. Denine Burkett,
Dr. Ellina Grigorieva, Dr. Ioan Hrinca, Dr. Jonathan Lambright, Dr. Michael Simmers.
Dr. Scott Smith, Dr. Kenneth Willmert, Dr. Nashwan Younis, Dr. Steven Finley,
Dr. Hong Zhou, Dr. Guoqing Wu

THE SESSIONS CHAIR

Thanks to all of the Session Chairs for your guidance of the participants and presenters in each session to maximize the experiences of all the session attendees to convey the thoughts and new ideas each brings to our conference. All timely presentations are important to expand the overall knowledge offered from many perspectives.

Dr. David Arney , Dr. Daniel Bukofzer, Dr. David Elam, Dr. David Marchette,
Dr. Daniel Gefroh, Dr. Denine Burkett, Dr. Demetria White, Dr. Derrek Dunn,
Dr. Duc T Nguyen, Dr. Edmond Richer, Dr. Ellina Grigorieva, Dr. Haris Catrakis,
Dr. Ioan Hrinca, Dr. Irina Chernikova, Dr. Jessica Buck, Dr. Jose L. Enriquez, Dr. John Lanttanzio,
Dr. Kenneth Willmert, Dr. Lisa Kovalchick, Dr. Malatu Lemma, Dr. Michael Simmers,
Dr. Nashwan Younis, Dr. Qin Lu, Dr. Randy Goldman, Dr. Sallam Salloum, Dr. Sam Spearing, Dr. YuCheng Liu

ALL PARTICIPANTS

We also want to thank each and everyone who attended our conference for their contributions to the knowledge bases presented and the interactions of all attendees who generously shared their knowledge and experiences to enhance the conference experience for all who attended. We hope to see all of you back in Hawaii again one day in our continuing effort to bring those together in conferencing here in this magnificent environment as we look to the future of all educational efforts in all parts of the world!

MAHALO!

Ala Moana Hotel

410 Atkinson Drive

Honolulu, Hawaii

Addendum

1. *Title:* **Mathematical Problems Arising in Chemical Enhance Oil Recovery**

Author/Presenter: Dr. Prabir Daripa ---- Texas A&M University

From: Session: Monday 13 June 11, 2011, 1:00 – 2:30pm, Carnation Room
                                To
New: Session: Monday 13 June 11, 2011, 10:00 -11:30am, Pakalana Room
----

2. Title: **It's Not the Math They Hate**

Author/Presenter: Dr. Michael J. Simmers ---- University of Wisconsin-Stevens Point

From: Session: Monday, 13 June 11, 2011, 1:00 – 2:30 pm, Plumeria Room
                                To
New: Session: Tuesday 14 June 11, 2011, 8:15 – 9:45 am, Pakalana Room
----

Cancellation:

1. Title: **The Expansion of Charlotte Airport (CLT) as a Potential Hub for Foreign Trade Activity**
Author/Presenter: Dr. Derrek B. Dunn ---- Savannah State University
Session: Tuesday, 14 June, 2011, 2:45 – 4:15 pm, Ilima Room

2. Title: **The Effectiveness of Incorporating Web Assign in the Mathematics Curriculum at Historically Black Colleges and Universities**
Author/Presenter: Dr. Deidre E. Paris ---- Savannah State University
Session: Wednesday, 15 June, 2011, 8:15 – 9:45 am, Plumeria Room

3. Title: **Laying the Foundation for a Climate Change Science and Policy Degree Program at a Historically Black University**
Author/Presenter: Dr. Derrek B. Dunn ---- Savannah State University
Session: Wednesday, 15 June, 2011, 10:00-11:30am, Pakalana Room

4. Title: **Chukchi Sea Monitoring Station Conceptual Framework**
Author/Presenter: Dr. Osama A. Abaza ---- University of Alaska, Anchorage
Session: Wednesday, 15 June, 2011, 10:00-11:30am, Pakalana Room