

7th Coastal Bend Mathematics and Statistics Conference

**The University of Texas-Rio Grande Valley
April 1, 2023 – Brownsville Campus**

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Program for Saturday, April 1, 2023

- LOCATION Miscellaneous rooms
- 08:30–10:30 **Parallel Sessions 1**
▷ Session 1a: Faculty presentations on Applied Mathematics
▷ Session 1b: Faculty presentations on Pure Mathematics
▷ Session 1c: Student presentations on Mathematics
▷ Session 1d: Student presentations on Statistics
▷ Session 1x: Best Online Presence Practices workshop
- 10:30–10:45 *Coffee break*
- LOCATION Miscellaneous rooms
- 10:45–11:45 **Parallel Sessions 2**
▷ Session 2a: Faculty presentations on Applied Mathematics
▷ Session 2b: Faculty presentations on Statistics
▷ Session 2c: Student presentations on Mathematics
▷ Session 2x: Best Online Presence Practices workshop
- 11:45–12:00 *Coffee break*
- LOCATION BLHSB 1.102
- CHAired BY *Vesselin Vatchev*
- 12:00–12:05 **Timothy Huber**
Welcome by School Director of the School of Mathematical and Statistical Sciences
- 12:05–12:15 **Vivian Incera**
Welcome by Dean of the College of Sciences and Mathematics
- 12:15–13:15 **Plenary Speaker: Beatrice Riviere** (riviere@rice.edu)
Rice University
“Numerical Solution of Gahn-Hilliard Navier-Stokes Equations”
- 13:15–14:15 Lunch
- LOCATION Miscellaneous rooms
- 14:15–16:15 **Parallel Sessions 3**
▷ Session 3a: Faculty presentations on Applied Mathematics
▷ Session 3b: Faculty presentations on Statistics
▷ Session 3c: Student presentations on Mathematics
▷ Session 3x: Best Online Presence Practices workshop
- 16:15–16:30 *Coffee break*
- LOCATION Miscellaneous rooms
- 16:30–18:00 **Parallel Sessions 4**
▷ Session 4a: Faculty presentations on Applied Mathematics
▷ Session 4b: Faculty presentations on Pure Mathematics
▷ Session 4c: Student presentations on Statistics
▷ Session 4x: Best Online Presence Practices workshop

Parallel Sessions 1

Session 1a: Faculty presentations on Applied Mathematics

- LOCATION BLHSB 1.102
- CHAired BY *Eleftherios Gkioulekas*
- 08:30–09:00 **Dambaru Bhatta** (dambaru.bhatta@utrgv.edu)
The University of Texas Rio Grande Valley
“Thermo-solutal convection in a horizontal porous layer”
- 09:00–09:30 **Roger Knobel** (roger.knobel@utrgv.edu)
The University of Texas Rio Grande Valley
“On the Periodic Behavior of Eigenvalues in Special Jacobi Matrices”
- 09:30–10:00 **Andras Balogh** (andras.balogh@utrgv.edu)
The University of Texas Rio Grande Valley
“Numerical Stationary Solutions for a Viscous Burgers’ Equation”
- 10:00–10:30 **Marlio Paredes** (marlio.paredes@correounivalle.edu.co)
Universidad del Valle (Colombia) and University of Texas Rio Grande Valley
“Mathematical modeling to study the dynamics of a methamphetamine market”

Session 1b: Faculty presentations on Pure Mathematics

- LOCATION BLHSB 1.104
- CHAired BY *Bingyuan Liu*
- 08:30–09:00 **Andrew Alaniz** (andrew.alaniz01@utrgv.edu)
The University of Texas Rio Grande Valley
“On the Irregularity Function of a Local Geometric Langlands Parameter”
- 09:00–09:30 **Oleg Musin** (oleg.musin@utrgv.edu)
The University of Texas Rio Grande Valley
“Karamata inequality and minimum energy configurations”
- 09:30–10:00 **B. A. Zambrano-Luna** (brian.zambrano@utrgv.edu)
The University of Texas Rio Grande Valley
“Non-archimedean Reaction-diffusion Cellular Neural Networks”
- 10:00–10:30 **W. A. Zuniga-Galindo** (wilson.zunigagalindo@utrgv.edu)
The University of Texas Rio Grande Valley
“p-Adic Statistical Field Theory and Convolutional Deep Boltzmann Machines”

Session 1c: Student presentations on Mathematics

LOCATION BLHSB 1.312

- CHAired BY **Omar Sharif**
- 08:30–08:50 **Joseph Omar Alanis** (joseph.alanis@utrgv.edu)
The University of Texas Rio Grande Valley
 “Generalized Dissection Operators of Modular Forms”
- 08:50–09:10 **Joselyne Aniceto** (Joselyne.aniceto@utrgv.edu)
The University of Texas Rio Grande Valley
 “Cranks and Polyhedral Geometry”
- 09:10–09:30 **Jena Gregory** (jena.gregory01@utrgv.edu)
University of Texas Rio Grande Valley
 “Iterated Rascal Triangles”
- 09:30–09:50 **Carlos Montes** (carlos.montes02@utrgv.edu)
The University of Texas Rio Grande Valley
 “Understanding homeless population changes through interpretable, Shallow Neural Networks.”
- 09:50–10:10 **Joel Williams** (joel.williams01@utrgv.edu)
The University of Texas Rio Grande Valley
 “An Algebraic Approach to 3-Dissection Operators on Spaces of Modular Forms”
- 10:10–10:30 **Julio Paez** (julio.paez01@utrgv.edu)
The University of Texas Rio Grande Valley
 “Approximate Solutions to the Two-Dimensional Euler Equations”

Session 1d: Student presentations on Statistics

LOCATION BLHSB 1.314

CHAired BY **Zhuanzhuan Ma and Sarjinder Singh**

- 08:30–08:50 **Theophilus Baidoo** (gyedutheophilus10@gmail.com)
The University of Texas Rio Grande Valley
 “Survival modeling of Breast Cancer Patients with Random Survival Forests and Cox Proportional deep neural network (DeepSurv)”
- 08:50–09:10 **Dipok Deb** (dipok.deb01@utrgv.edu)
The University of Texas Rio Grande Valley
 “Optimal quantization for discrete distributions”
- 09:10–09:30 **Saikou Jawla** (saikoujawla95@gmail.com)
University of Texas Rio Grande Valley
 “Data Science of Hospital Antibiotic Stewardship”
- 09:30–09:50 **Nicholas Niako** (nicholas.niako01@utrgv.edu)
The University of Texas Rio Grande Valley
 “Effect of missing data imputation methods on univariate time series forecasting with ARIMA and LSTM”
- 09:50–10:10 **Evans Nyanney** (evans.nyanney01@utrgv.edu)
University of Texas Rio Grande Valley
 “Quantization for the mixtures of overlap probability distribution”

10:10–10:30 **Tania Vargas** (tania.vargas01@utrgv.edu)
The University of Texas Rio Grande Valley
“A Machine Learning Approach to Obesity Phenotyping”

Session 1x: Best Online Presence Practices workshop

LOCATION BLHSB 1.316

08:30–10:30 Best Online Presence Practices workshop
Martha Asare (martha.asare01@utrgv.edu)
The University of Texas Rio Grande Valley
Kristen Hallas (kristen.hallas01@utrgv.edu)
The University of Texas Rio Grande Valley
Ilse Moya (ilse.moya01@utrgv.edu)
The University of Texas Rio Grande Valley

Parallel Sessions 2

Session 2a: Faculty presentations on Applied Mathematics

LOCATION BLHSB 1.102

CHAired BY **Wilson Zuniga-Galindo**

10:45–11:15 **Zhijun Qiao** (zhijun.qiao@utrgv.edu)
The University of Texas Rio Grande Valley
“On non-traveling wave type of peakon solutions”

11:15–11:45 **Zhijun Qiao** (zhijun.qiao@utrgv.edu)
The University of Texas Rio Grande Valley
“UTRGV graduate programs in Math, Stats, and Interdisciplinary STEM areas”

Session 2b: Faculty presentations on Statistics

LOCATION BLHSB 1.104

CHAired BY **Brian Zambrano-Luna**

10:45–11:15 **Zhuanzhuan Ma** (zhuanzhuan.ma@utrgv.edu)
University of Texas Rio Grande Valley
“Sparse Bayesian variable selection in high dimensional logistic regression models with correlated priors”

11:15–11:45 **Eleftherios Gkioulekas** (eleftherios.gkioulekas@utrgv.edu)
University of Texas Rio Grande Valley
“Statistical evidence from case series data in support of early outpatient COVID-19 treatment protocols”

Session 2c: Student presentations on Mathematics

LOCATION BLHSB 1.312

CHAired BY *Dambaru Bhatta*

10:45–11:05 **Changyan Shi** (changyan.shi01@utrgv.edu)
The University of Texas Rio Grande Valley
“Bright soliton solutions to a coupled Sasa-Satsuma equation”

11:05–11:25 **Mahanthesh Basavarajappa** (mahanthesh.b@utrgv.edu)
The University of Texas Rio Grande Valley
“Maximum Density Effects on Rayleigh Benard Convection Problem”

11:25–11:45 **Madison Riba** (mriba@islander.tamucc.edu)
Texas A&M University-Corpus Christi
“Statistical Modeling of Cruise Data in the Gulf of Mexico”

Session 2x: Best Online Presence Practices workshop

LOCATION BLHSB 1.316

10:45–11:45 Best Online Presence Practices workshop
Martha Asare (martha.asare01@utrgv.edu)
The University of Texas Rio Grande Valley
Kristen Hallas (kristen.hallas01@utrgv.edu)
The University of Texas Rio Grande Valley
Ilse Moya (ilse.moya01@utrgv.edu)
The University of Texas Rio Grande Valley

Parallel Sessions 3

Session 3a: Faculty presentations on Applied Mathematics

LOCATION BLHSB 1.102

CHAired BY *Mallikarjunah Muddamallapa*

14:15–14:45 **Vesselin Vatchev** (vesselin.vatchev@utrgv.edu)
The University of Texas Rio Grande Valley
“On Solving Nonlinear PDEs in a Class of Rational Exponential Functions”

14:45–15:15 **Michael Lindstrom** (mike.lindstrom@utrgv.edu)
The University of Texas Rio Grande Valley
“Continuous Semi-Supervised Nonnegative Matrix Factorization”

15:15–15:45 **Aden Ahmed** (aden.ahmed@tamuk.edu)
Texas A&M University - Kingsville
“Taking Chances: The Analysis of Simplified Parcheesi”

15:45–16:15 **Faranak Rabiei** (faranak.rabiei@tamuk.edu)
Texas A&M University Kingsville
“Fractal-fractional-order modified Predator-Prey mathematical model with immigrations”

Session 3b: Faculty presentations on Statistics

LOCATION BLHSB 1.104

CHAired BY **Kristen Hallas**

14:15–14:45 **Mai Dao** (mai.dao@wichita.edu)
Wichita State University
“Bayesian binary quantile regression variable selection”

14:45–15:15 **Kun Gou** (kgou@tamusa.edu)
Texas A&M University-San Antonio
“Mechanical Characterization and Statistical Analysis for the Stiffness Parameters of Umbilical Arteries”

15:15–15:45 **Sarjinder Singh** (kuss2008@tamuk.edu)
Texas A&M University-Kingsville
“Bias Interrupters Developed Estimators’ Network (BIDEN) with a Mixture of TRUMP Cuts and Jackknifing”

Session 3c: Student presentations on Mathematics

LOCATION BLHSB 1.312

CHAired BY **Muhammad Mohebujaman**

14:15–14:35 **Saul J. Cardenas** (hongwei.wang@tamiu.edu)
Department of Mathematics and Physics, Texas A&M International University, Laredo, Texas
“Parental Involvement In Education”

14:35–14:55 **Exiquio Garcia** (harag@tamiu.edu)
Department of Mathematics and Physics, Texas A&M International University, Laredo, Texas
“Primes and Composites: From Old to New”

14:55–15:15 **Iris Lizette Gomez** (irisg898@gmail.com)
Texas A&M University-San Antonio alumni
“The Dynamics of Marriage Relationships with Mathematical Models”

15:15–15:35 **Julian V. Miranda** (harag@tamiu.edu)
Department of Mathematics and Physics, Texas A&M International University, Laredo, Texas
“Novel efficient algorithms for stochastic magnetohydrodynamic flow”

15:35–15:55 **Carolina Anahi Rizzi** (hongwei.wang@tamiu.edu)
Department of Mathematics and Physics, Texas A&M International University, Laredo, Texas

“Counting Lattice Points”

15:55–16:15 **Maria F. Espericueta Sandoval** (hongwei.wang@tamiu.edu)
Department of Mathematics and Physics, Texas A&M International University, Laredo, Texas
“A Glimpse of Algebraic Numbers”

Session 3x: Best Online Presence Practices workshop

LOCATION BLHSB 1.316

14:15–16:15 Best Online Presence Practices workshop
Martha Asare (martha.asare01@utrgv.edu)
The University of Texas Rio Grande Valley
Ise Moya (ilse.moya01@utrgv.edu)
The University of Texas Rio Grande Valley

Parallel Sessions 4

Session 4a: Faculty presentations on Applied Mathematics

LOCATION BLHSB 1.102

CHAired BY **Kun Gou**

16:30–17:00 **Muhammad Mohebujaman, Ph.D.** (harag@tamiu.edu)
Texas A&M International University
“Numerical Analysis and Testing of Decoupled Algorithms for Reaction-Diffusion N -Species Competition Model with Harvesting/Stocking Effort”

17:00–17:30 **Lihua Zuo** (lihua.zuo@tamuk.edu)
Texas A&M University-Kingsville
“Finite Difference Method for Three-Dimensional Fracture Propagation in Reservoir with Multi-Bedlayers”

Session 4b: Faculty presentations on Pure Mathematics

LOCATION BLHSB 1.104

CHAired BY **Eleftherios Gkioulekas**

16:30–17:00 **Reza Ahangar** (reza.ahangar@tamuk.edu)
Texas A&M University Kingsville
“Feynman - Bogdan Path Integral”

17:00–17:30 **Michael T. Muzheve** (michael.muzheve@tamuk.edu)
Texas A&M University - Kingsville
“Packing 3-vertex paths in vertex envelopes”

Session 4c: Student presentations on Statistics

LOCATION BLHSB 1.312

CHAired BY *Sarjinder Singh*

16:30–16:50 **Purna chandra sekhar rao Bellamkonda** (purna6581@gmail.com)
Texas A&M University- Kingsville
“Introduction to SAS programming: Be a Birth Weekday Winner!”

16:50–17:10 **Srikar Govardhana** (srikar.govardhana@students.tamuk.edu)
Texas A&M University - Kingsville
“On the estimation of empirical mode”

17:10–17:30 **Omar Sharif** (sharifdu88@gmail.com)
Daffodil International University, Dhaka, Bangladesh
“Analyzing the Impact of Demographic Variables on Spreading and Forecasting COVID-19”

Session 4x: Best Online Presence Practices workshop

LOCATION BLHSB 1.316

16:30–17:30 Best Online Presence Practices workshop
Martha Asare (martha.asare01@utrgv.edu)
The University of Texas Rio Grande Valley
Kristen Hallas (kristen.hallas01@utrgv.edu)
The University of Texas Rio Grande Valley
Ilse Moya (ilse.moya01@utrgv.edu)
The University of Texas Rio Grande Valley