

# SIDIM 2024

## Detailed Schedule of Activities

March 1, 2024

Time/Room	Activity
3:00-5:00	Registration (Student Center)
3:00-6:30	Exhibit Booths (Student Center)
3:00-4:00	Coffee Break (Student Center)
4:00-4:25	Contributed presentations
GS 101	<u>Simulacros de exámenes en Precálculo I: Una estrategia efectiva para estudiantes de primer semestre</u> , Julian A Jimenez Franco, University of Puerto Rico at Mayagüez.
GS 102	<u>Structure and count of monomials k-rotation symmetric functions over Galois fields</u> , Carlos A. Molina Salazar, University of Puerto Rico at Arecibo.
GS 103	<u>An Efficient Implementation and Analysis of Zeta Functions of APN Curves and Their Protograph LDPC Codes for Space Applications</u> , Alec S. Zabel-Mena, University of Puerto Rico at Río Piedras.
GS 104	<u>Sistema eficiente para el procesamiento distribuido de información clínica</u> , Benny Rodríguez, University of Puerto Rico at Río Piedras.
GS 105	<u>Visualización de Alto Rendimiento Utilizando el GPU</u> , Elio Ramos Colón, Universidad de Puerto Rico en Humacao.
GS 106	<u>Why is learning so often difficult to achieve?</u> , Andres J. Vazquez-Velez, University of Puerto Rico.
ANF GS	
4:30-4:55	Contributed presentations
GS 101	<u>Desafiando mentes jóvenes: Bebras y la Computación creativa</u> , Edwin Flórez, Universidad de Puerto Rico en Mayagüez.
GS 102	<u>Arithmetical Structures on Graphs</u> , Alexander Diaz-Lopez, Villanova University.
GS 103	<u>Computation of the Linear Complexity of Families of Multidimensional Periodic Arrays</u> , Cesar F. Bolaños Revelo, University of Puerto Rico at Mayagüez.
GS 104	<u>Plataforma web para la gestión de subastas y procesos de licitaciones municipales</u> , Benny Rodríguez, University of Puerto Rico at Río Piedras.
GS 105	<u>Metodología de Enseñanza en Espiral en Competencias de Matemáticas</u> , Victor M. Reyes, Universidad de Puerto Rico en Mayagüez.

<b>Time/Room</b>	<b>Activity</b>
GS 106	<u>Comparing exposure pathways of enteric pathogens to infants living in low to middle income countries.</u> Shalimar Vargas-Grippio, University of Puerto Rico.
ANF GS	<u>Medidas de la incertidumbre de una probabilidad.</u> Alvaro Lecompte Montes, Universidad Interamericana de Puerto Rico.
<b>5:00-5:25</b>	<b>Contributed presentations</b>
GS 101	<u>Análisis en Competencias Matemáticas: Evaluación de fortalezas y áreas por mejorar en estudiantes de escuela elemental en Puerto Rico,</u> Junior Arauz Aguilar, University of Puerto Rico at Mayagüez.
GS 102	<u>A Combinatorial Model for Lane Merging.</u> Erik Insko, Central College.
GS 103	<u>Propiedades de los Grafos de los Divisores de Cero de Anillos Conmutativos,</u> Byron Alexander Patiño de la Cruz, University of Puerto Rico at Mayagüez.
GS 104	<u>Parallelized intelligent multi-agent systems with fuzzy logic models to simulate fish school behavior,</u> Carlos Juan E. Diaz Vargas, University of Puerto Rico at Río Piedras.
GS 105	<u>The neutralization problem: a formalization of natural language rule-based phonology,</u> Michael Rivera Serrano, Stony Brook University.
GS 106	<u>Predicting Outcomes in a Population in Early Recovery from Alcohol Use Disorder,</u> Julian A. Soto-Perez, University of Puerto Rico at Mayagüez.
ANF GS	<u>Some New Results in the Even Case of the Exceptional Almost Perfect Nonlinear Conjecture,</u> Carlos A. Agrinoni Santiago, Purdue University.
<b>5:30-6:20 (Theater)</b>	<b>Invited presentation:</b> <u>Creating Metaphors for Linear Algebra Concepts: Developing Cognitive, Behavioral, and Affective Domains,</u> Hortensia Soto, Colorado State University.
<b>7:00-9:00</b>	<b>Official Opening and Social Gathering at the Humacao Lito Peña Art Center (cocktail and refreshments)</b>

March 2, 2024

Time/Room	Activity
<b>7:00-8:30</b>	<b>Breakfast (Student Center)</b>
<b>7:30-9:00</b>	<b>Registration (Student Center)</b>
<b>7:00-4:30</b>	<b>Exhibit Booths (Student Center)</b>
<b>8:30-8:55</b>	<b>Contributed presentations</b>
GS 101	<u>Proposal for a Teaching Model in Mathematics Focused on Problem Solving at the Secondary Level in Puerto Rico,</u> Carlos J. Colón-Rivera, University of Puerto Rico at Cayey.
GS 102	<u>Calculating the parameters of Schubert symplectic codes,</u> Fernando L. Piñero, University of Puerto Rico at Ponce.
GS 103	<u>Epidemiology of Amyotrophic Lateral Sclerosis in Puerto Rico: Spatial distribution of cases,</u> Frances M. Aponte-Caraballo, Medical Sciences Campus, University of Puerto Rico.
GS 104	<u>The Inhomogeneous Diffusion Equation of Wentzell type with Discontinuous Data,</u> Marilyn N. Guerrero-Laos, University of Puerto Rico at Mayagüez.
GS 105	<u>How Artificial Intelligence is reshaping animal studies,</u> Remi Megret, University of Puerto Rico at Río Piedras.
GS 106	<u>An efficient implementation for real-time data aggregation of transactional data lakes,</u> John Wilson, University of Puerto Rico at Río Piedras.
ANF GS	
<b>9:00-9:25</b>	<b>Contributed presentations</b>
GS 101	<u>The Actuarial Profession,</u> Arnaldo Cruet Rivera, Triple-S Salud.
GS 102	<u>Multidimensional Costas Arrays,</u> Ivelisse Rubio, University of Puerto Rico at Río Piedras.
GS 103	<u>A Bayesian Hierarchical Dynamic Linear Model for Net Migration Rates,</u> Angélica M. Rosario Santos, University of Puerto Rico at Río Piedras.
GS 104	<u>Algunos resultados sobre <math>\tau_n</math>-grafos,</u> Reyes M. Ortiz Albino, Universidad de Puerto Rico en Mayagüez.
GS 105* (9:10 AM)	<u>Self-organization and Intelligent Multi-Agent Systems for Modeling Natural Ecosystems,</u> David Flores, University of Puerto Rico at Río Piedras.

<b>Time/Room</b>	<b>Activity</b>
GS 106	<u>Applying Deep Learning Techniques for Low-Density Parity-Check (LDPC) Decoding,</u> Ollantay Medina-Huamán, University of Puerto Rico at Humacao.
ANF GS	<u>Mathematical Modeling of COVID-19 and Disease Informed Neural Network with Human Interactions,</u> Jeremis Morales, et al., Inter American University of Puerto Rico.
<b>9:30-9:55</b>	<b>Contributed presentations</b>
GS 101	<u>Matemática para los estudiantes “non-STEM”,</u> Ana Helvia Quintero, University of Puerto Rico at Río Piedras.
GS 102	<u>ViBEx: A Visualization Tool for Gene Expression Analysis,</u> Michael H. Terrefortes-Rosado, University of Puerto Rico at Río Piedras.
GS 103	<u>A Bayesian Statistical Spatial Risk Assessment of Extreme Hydrological Hazards and Decision Making in a Climate Change Scenario, with emphasis on Puerto Rico and the Caribbean,</u> David Torres Núñez, Universidad de Puerto Rico en Río Piedras.
GS 104	<u>Global regularity for general quasi-linear problems over irregular regions,</u> Rafael Gonzalez Pugliese, University of Puerto Rico at Mayagüez.
GS 105* (9:40 AM)	<u>Elementary motion sequence detectors in whisker somatosensory cortex,</u> Keven Laboy, Molecular Sciences Research Center, San Juan.
GS 106	<u>Deformed plate wells detection by means of image filters, keystone corrections and the Hough transform,</u> Emmanuel Rosa Delgado, University of Puerto Rico at Humacao.
ANF GS	<u>Un sistema tipo Filippov tridimensional para el análisis del control del dengue,</u> Victor Manuel Salcedo-Rosero, Universidad de Puerto Rico en Mayagüez.
<b>10:00-11:00</b>	<b>Poster Session and Coffee Break (Student Center)</b>
	<u>Framework for Estimation of CO2 Sequestration from Sargassum Using Remote Sensing and Neural Networks,</u> Alexander Claudio, Inter American University of Puerto Rico at Bayamón.
	<u>Towards a Nearshore Sargassum Segmentation Model,</u> Andrés Ramos Rodríguez, University of Puerto Rico at Río Piedras.
	<u>On the Transient of a family of Boolean Monomial Dynamical Systems,</u> Arnaldo Vera, University of Puerto Rico at Mayagüez.
	<u>Web application for Real-Time Monitoring and Analysis of Bee Behavior from Video,</u> Eduardo J Figueroa-Santiago, University of Puerto Rico at Río Piedras.
	<u>Exploring the Environmental Impact of Equine Rhinitis A through Biomathematics and Population Dynamics,</u> Elbelier Rivera Torres, Escuela Especializada en Matemáticas, Ciencias y Tecnología de San Juan.

Time/Room	Activity
	<u>Observing CH in the Trifid Nebula.</u> Gerally N. Medina Rivera, University of Puerto Rico at Mayagüez.
	<u>Molecular Modeling and Visualization for Hotspot Detection in Three-dimensional Protein Structures,</u> Isabel T. Rivera Plata, University of Puerto Rico at Río Piedras.
	<u>On <math>\tau_n</math>-factorizations and <math>\tau_n</math>-graphs,</u> Jean C. García-Colón, University of Puerto Rico at Mayagüez.
	<u>Cloud based data visualizations and automated anomaly detection for web services threat detection,</u> Jesús A. Rodríguez Rivera, University of Puerto Rico at Río Piedras.
	<u>Un Enfoque Bayesiano Para El Estudio De La Propagación Temprana De Brotes De Enfermedades De Carácter Epidémico,</u> Jimmy O. Díaz Portillo, University of Puerto Rico at Mayagüez.
	<u>Development of a User-Friendly, Cost-Effective Network Situational Awareness and Vulnerability Scanner for Resource-Constrained Organizations,</u> José E. Rodríguez-Ríos, University of Puerto Rico at Río Piedras.
	<u>Binarizing scRNA-seq Data with Alevin Fry Method: Assessing Efficiency in Diabetes and COVID-19 Models,</u> Juan F. Hernandez Jose, University of Puerto Rico at Río Piedras.
	<u>Assessing the Burden of Disease of Gram-Negative Bloodstream Infections in a Brazilian Hospital: A Retrospective Cohort Study from 2015 to 2019,</u> Kevin Soto-Cedeño, Icahn School of Medicine at Mount Sinai, New York.
	<u>Detection of CH in the Pipe Nebula.</u> Marc A Thys Charneco, University of Puerto Rico at Mayagüez.
	<u>Physics-informed ML predictions for damped harmonic motion,</u> Michael J. Rivera, University of Puerto Rico at Humacao.
	<u>Algorithmic analysis of gene regulatory networks of Drosophila melanogaster flies raised in microgravity,</u> Miguel E. Cruz Molina, University of Puerto Rico at Río Piedras.
	<u>Data Analysis of the Electrical Power System in Puerto Rico from 2013 to 2022,</u> Onix Gonzalez, Technological Institute of Puerto Rico, Manati Campus, Puerto Rico.
	<u>Variable Name Reconstruction for Decompilers Using LLMs and Program Analysis,</u> Sergio D. Rodríguez De Jesús, University of Puerto Rico at Río Piedras.
	<u>Análisis de la Presencia de Enterococos en las Aguas Costeras de San Gerónimo: Impacto en la Experiencia Turística y Salud Pública,</u> Yedrian J. Nieves Guillen, Escuela Especializada en Matemáticas, Ciencias y Tecnología de San Juan.

<b>Time/Room</b>	<b>Activity</b>
	<u>K-means-directions algorithm for semi-supervised analysis on the sphere.</u> Yeily P. Guzman-Castro, University of Puerto Rico at Mayagüez.
	<u>Comparison of dimensionality reduction methods to improve hyperspectral image classification,</u> Yisel N. Sánchez Encinales, University of Puerto Rico at Mayagüez.
	<u>The Baryonic Tully-Fisher Relation for galaxies with supernova distances.</u> Yulián Humarán Humarán, University of Puerto Rico at Mayagüez.
<b>11:00-11:50 (Theater)</b>	<b>Invited presentation:</b> <u>On the Holder regularity of isometric immersions and the Monge-Ampere system,</u> Marta Lewicka, University of Pittsburgh.
<b>12:00-1:30</b>	<b>Lunch (Cafeteria Student Center)</b>
<b>1:30-2:20 (Theater)</b>	<b>Invited presentation:</b> <u>Control, Optimization and Applications to Fractional PDEs,</u> Mahamadi Warma, George Mason University.
<b>2:30-2:45</b>	<b>Coffee Break (Student Center)</b>
<b>2:45-3:10</b>	<b>Contributed presentations</b>
GS 101	<u>Análisis estadístico de los factores sociales que influyen en el rendimiento académico de los estudiantes de la FAE, UPRRP,</u> Jairo A. Ayala-Godoy, Universidad de Puerto Rico Recinto de Río Piedras.
GS 102	<u>Interacciones sociales de los estudiantes de escuela elemental al resolver problemas matemáticos colaborativamente,</u> Omar Hernández Rodríguez, University of Puerto Rico at Río Piedras.
GS 103	<u>Linear Model Selection: P-Values vs Probabilities,</u> Fernando Betancourt Vélez, Medical Sciences Campus of University of Puerto Rico and University of Puerto Rico at Río Piedras.
GS 104	<u>A generalized double-phase problem over arbitrary domains.</u> Clara Blanco-Drago, University of Puerto Rico at Mayagüez.
GS 105	<u>Affine equivalence of k-rotation symmetric Boolean functions.</u> José E. Calderón Gómez, University of Puerto Rico at Río Piedras.
GS 106	<u>A Pilot Study of Methylidyne in the Galactic Center Region using the Arecibo 12-m Telescope,</u> Allison J. Smith, University of Puerto Rico at Mayagüez.
ANF GS	<u>Visualization of Musical Tension,</u> Gabriel A. Santiago Plaza, University of Puerto Rico at Río Piedras.
<b>3:15-3:40</b>	<b>Contributed presentations</b>
GS 101	<u>The state of K-12 computer science education in Puerto Rico: advances, challenges and opportunities,</u> Edusmildo Orozco, University of Puerto Rico at Río Piedras.
GS 102	<u>Analysis of Multi-Step Items in Computer-Assisted Exams in Calculus.</u> Roberto Toro-Rodriguez, University of Alabama.

<b>Time/Room</b>	<b>Activity</b>
GS 103	<u>An Objective and Robust Bayes Factor for the Hypothesis Test One Sample and Two Population Means</u> , Israel A. Almodóvar-Rivera, University of Puerto Rico at Mayagüez.
GS 104	<u>Fractional Cauchy Problems and Resolvent Families</u> , Henry J. Cortez, University of Puerto Rico at Río Piedras.
GS 105	<u>Modular Square Roots of 1</u> , Lillian González, University of Puerto Rico at Río Piedras.
GS 106	<u>Identifying Outliers in Radio Astronomy Data from the 12m AO Telescope Using the Generalized Spectral Kurtosis Estimator</u> , Emmanuel J. Morales Butler, University of Puerto Rico at Utuado.
ANF GS	<u>Experiencias Computacionales en Talleres de Verano en Ciencias de Materiales a Estudiantes de Escuela Superior</u> , José O. Sotero Esteva, Universidad de Puerto Rico en Humacao.
<b>3:45-4:10</b>	<b>Contributed presentations</b>
GS 101	<u>Using Self-explanation Tasks Designed from Principles of Variation Theory to Investigate Undergraduates Learning of Reading Strategies for Comprehending Mathematical Proofs</u> , Hillary Bermudez, Syracuse University.
GS 102	<u>Errores cometidos por los estudiantes universitarios en el estudio del límite de una función</u> , Wanda Velázquez-Rosado, Universidad de Puerto Rico en Río Piedras.
GS 103	<u>Deformations of rotating disks and spheres under self gravitation</u> , Pablo V. Negrón-Marrero, University of Puerto Rico at Humacao.
GS 104	<u>Generalized Quasi-linear Fractional Venttsel'-Type Problems Over Non-Smooth Regions</u> , Efren Mesino-Espinosa, University of Puerto Rico at Mayagüez.
GS 105	<u>Updates towards the conjecture on exceptional APN functions</u> , Moises Delgado, University of Puerto Rico at Cayey.
GS 106	<u>Characterization of well posedness for second-order abstract differential equations on function spaces</u> , Rafael Aparicio, University of Puerto Rico at Ponce.
ANF GS	
<b>4:15-5:00</b>	<b>Administrative session (ANF GS)</b>