

# Program

## Workshop on Modeling and Simulation for Science and Engineering



**Foristom**  
Foundation

August 8 to 9, 2024  
Medellín, Colombia

**Erica Mejía Restrepo**  
Chairman VI WMSSE

**Ely Dannier V. Niño**  
Editor, Layout Coordinator

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Alfred University, United States of America
- Dr. Juan Muñoz Saldaña  
Centro de Investigación y de Estudios Avanzados del Instituto Politécnico Nacional, Mexico
- MSc. Luisa Fernanda Ortiz  
Universidad Loyola Andalucía, Spain
- MSc. Anderson Sandoval Amador  
Universidad Loyola Andalucía, Spain

## Invited Speakers

- ✓ Dr. Steven Tidrow  
Alfred University, United States of America
- ✓ Dr. Juan Muñoz Saldaña  
Laboratorio Nacional de Proyección, Mexico
- ✓ Dr. Eduardo Daniel Méndez Morales  
Universidad de la República, Uruguay
- ✓ Dr. Elaine Cristina Paris  
Empresa Brasileira de Pesquisa Agropecuária, Brazil



## CONFERENCE VENUE



## Conference Room

**Thursday, August 8, 2024**

**Auditorium Luis Alberto Cartagena  
Bloque 8, Parque Tech  
Institución Universitaria Pascual Bravo**

**Friday, August 9, 2024**

**Auditorium Luis Alberto Cartagena  
Bloque 8, Parque Tech  
Institución Universitaria Pascual Bravo**

# Topics

- ✓ **CS - Computer Science**
- ✓ **MS - Mechatronic Systems**
- ✓ **DSM - Dynamic Systems Modeling**
- ✓ **PCM - Physical-Chemistry Modeling**
- ✓ **PMM - Physics-Mathematical Modeling**
- ✓ **MSD - Modeling, Simulation, and Diagnostics**
- ✓ **ESET - Education on Science, Engineering, and Technology**
- ✓ **SETISI - Science, Engineering, Technology, and Innovation for Social Inclusion**



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*PROGRAM*

**VI WMSSE**



## FIRST DAY

August 8, 2024

DAY HOUR	THURSDAY MORNING
7:30 – 8:30	
8:30 – 9:00	<b>Opening Ceremony:</b> VI Workshop on Modeling and Simulation for Science and Engineering (VI WMSSE) <b>Conference Room:</b> Auditorium Luis Alberto Cartagena, Bloque 8, Institución Universitaria Pascual Bravo
9:00 – 9:20	<b>Oral On-Site Presentation ID 13:</b> Electricity generation and plastic waste reduction using the fungus <i>Paecilomyces</i> as a biodegrader in microbial fuel cells <b>Speaker:</b> Segundo Rojas Flores <b>Conference Room:</b> Auditorium Luis Alberto Cartagena, Bloque 8, Institución Universitaria Pascual Bravo
9:20 – 9:40	<b>Oral On-Site Presentation ID 15:</b> Modeling calcined kaolinitic clays in cement: a discrete kinetic approach <b>Speaker:</b> Camilo Rosero-Chicaiza <b>Conference Room:</b> Auditorium Luis Alberto Cartagena, Bloque 8, Institución Universitaria Pascual Bravo
9:40 – 10:00	<b>Oral On-Site Presentation ID 26:</b> Topology optimization and additive manufacturing of a McPherson suspension control arm for a combustion vehicle modified to work with an electric motor <b>Speaker:</b> Octavio Andrés González Estrada <b>Conference Room:</b> Auditorium Luis Alberto Cartagena, Bloque 8, Institución Universitaria Pascual Bravo
10:00 – 10:30	<b>Plenary Lecture I:</b> Extension of new simple material model to additional space groups <b>Keynote Speaker:</b> Steven Tidrow <b>Conference Room:</b> Auditorium Luis Alberto Cartagena, Bloque 8, Institución Universitaria Pascual Bravo
10:30 – 11:00	<b>Coffee Break</b>
11:00 – 11:20	<b>Oral On-Site Presentation ID 37:</b> Construction and demolition waste as a solution to environmental and agricultural challenges <b>Speaker:</b> Erica Mejía Restrepo <b>Conference Room:</b> Auditorium Luis Alberto Cartagena, Bloque 8, Institución Universitaria Pascual Bravo
11:20 – 11:40	<b>Oral On-Site Presentation ID 9:</b> Gender stereotypes in areas of science, technology, engineering, and mathematics perceived by eleventh-grade adolescent women in an educational institution in Bello, Colombia <b>Speaker:</b> Gloria Andrea Mayorga Martínez <b>Conference Room:</b> Auditorium Luis Alberto Cartagena, Bloque 8, Institución Universitaria Pascual Bravo
11:40 – 12:00	<b>Oral On-Site Presentation ID 6:</b> Evaluation of geometries of thermal energy storage base-cement <b>Speaker:</b> Luisa Fernanda Ortiz Vásquez <b>Conference Room:</b> Auditorium Luis Alberto Cartagena, Bloque 8, Institución Universitaria Pascual Bravo
12:00 – 12:30	<b>Plenary Lecture II:</b> Nanoenvironments in biochemistry: contributions to a diffusional model <b>Keynote Speaker:</b> Eduardo Méndez Morales <b>Conference Room:</b> Auditorium Luis Alberto Cartagena, Bloque 8, Institución Universitaria Pascual Bravo
12:30 – 14:00	<b>Lunch Break</b>



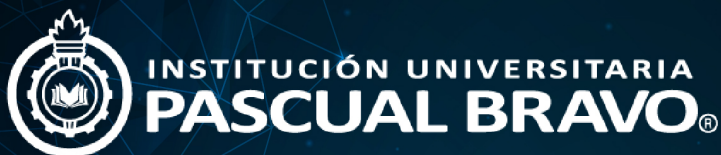
DAY HOUR	THURSDAY AFTERNOON
14:00 – 14:20	<b>Oral On-Site Presentation ID 11:</b> Thermomagnetic phenomena in a ferrimagnet type-Ising: Monte Carlo analysis <b>Speaker:</b> Nicolás De La Espriella <b>Conference Room:</b> Auditorium Luis Alberto Cartagena, Bloque 8, Institución Universitaria Pascual Bravo
14:20 – 14:40	<b>Oral On-Site Presentation ID 10:</b> Gender stereotypes were perceived in science, technology, engineering, and mathematics by eleventh-grade adolescent women and professionals in their educational and work fields in Bello, Colombia <b>Speaker:</b> Sara Lucía Gómez Rodríguez <b>Conference Room:</b> Auditorium Luis Alberto Cartagena, Bloque 8, Institución Universitaria Pascual Bravo
14:40 – 15:00	<b>Oral On-Site Presentation ID 20:</b> Influence of the size distribution and shape of the aggregate on the rheology of cement-based mixtures <b>Speaker:</b> Jaime Correa Yepes <b>Conference Room:</b> Auditorium Luis Alberto Cartagena, Bloque 8, Institución Universitaria Pascual Bravo
15:00 – 15:20	<b>Oral On-Site Presentation ID 14:</b> Assessment of the distribution and concentration of early deforestation alerts in Colombia through spatial analysis <b>Speaker:</b> Jonatan Esteban González Balaguera <b>Conference Room:</b> Auditorium Luis Alberto Cartagena, Bloque 8, Institución Universitaria Pascual Bravo
15:20 – 15:40	<b>Oral On-Site Presentation ID 21:</b> Correlation between kinetic behavior and compressive strength of the alkaline activation process <b>Speaker:</b> Mauled Yesenia Echeverri Aguirre <b>Conference Room:</b> Auditorium Luis Alberto Cartagena, Bloque 8, Institución Universitaria Pascual Bravo
15:40 – 16:00	<b>Oral On-Site Presentation ID 38:</b> Evaluation of the compressive strength of bone cements with antibiotics <b>Speaker:</b> Ivan Santiago Medina Garcia <b>Conference Room:</b> Auditorium Luis Alberto Cartagena, Bloque 8, Institución Universitaria Pascual Bravo
16:00 – 16:30	<b>Coffee Break</b>
16:30 – 17:00	<b>Plenary Lecture III:</b> Evaluation of compounds obtained from manganese ore residue as reinforcement to starch films for improving mechanical and optical properties <b>Keynote Speaker:</b> Elaine Cristina Paris <b>Conference Room:</b> Auditorium Luis Alberto Cartagena, Bloque 8, Institución Universitaria Pascual Bravo
17:00 – 17:20	<b>Oral On-Site Presentation ID 12:</b> Exploring the Impact of synthesis on the properties of simple oxides: a study on Iron, Titanium, Calcium, Niobium, and other elements <b>Speaker:</b> Miryam Rincón Joya <b>Conference Room:</b> Auditorium Luis Alberto Cartagena, Bloque 8, Institución Universitaria Pascual Bravo
17:20 – 17:40	<b>Oral On-Site Presentation ID 17:</b> Role of the deGennes length on the magnetic reaction of a superconducting chock <b>Speaker:</b> Jose Jose Barba Ortega <b>Conference Room:</b> Auditorium Luis Alberto Cartagena, Bloque 8, Institución Universitaria Pascual Bravo
17:40 – 18:00	<b>Oral On-Site Presentation ID 15:</b> Assessing perovskite coatings using artificial intelligence to enhance solar cell efficiency <b>Speaker:</b> Cristian Andrés Hernández Salazar <b>Conference Room:</b> Auditorium Luis Alberto Cartagena, Bloque 8, Institución Universitaria Pascual Bravo
18:00 – 18:30	<b>Plenary Lecture IV:</b> Optimization strategies of thermal spray processes <b>Keynote Speaker:</b> Juan Muñoz Saldaña <b>Conference Room:</b> Auditorium Luis Alberto Cartagena, Bloque 8, Institución Universitaria Pascual Bravo

## SECOND DAY

August 9, 2024

DAY HOUR	FRIDAY AFTERNOON
14:00 – 14:20	<p><b>Oral On-Site Presentation ID 32:</b> Innovation in global agriculture: a review of digital tools for application in Colombia  <b>Speaker:</b> Cristian Ubaldo Tirado Murcia  <b>Conference Room:</b> Auditorium Luis Alberto Cartagena, Bloque 8, Institución Universitaria Pascual Bravo</p>
14:20 – 14:40	<p><b>Oral On-Site Presentation ID 29:</b> Hysteretic, compensation and discontinuous behaviors in a high-spin ferrimagnet: <math>S=3</math>, <math>Q=7/2</math>  <b>Speaker:</b> Nicolás De La Espriella  <b>Conference Room:</b> Auditorium Luis Alberto Cartagena, Bloque 8, Institución Universitaria Pascual Bravo</p>
14:40 – 15:00	<p><b>Oral On-Site Presentation ID 27:</b> Exploring electrostatic interactions between non-spherical dielectric particles: implications for material design  <b>Speaker:</b> Daniel Alejandro Olaya Muñoz  <b>Conference Room:</b> Auditorium Luis Alberto Cartagena, Bloque 8, Institución Universitaria Pascual Bravo</p>
15:00 – 15:20	<p><b>Oral On-Site Presentation ID 22:</b> Structural dynamics of steel cables  <b>Speaker:</b> Robinson Fernando Rua Patiño  <b>Conference Room:</b> Auditorium Luis Alberto Cartagena, Bloque 8, Institución Universitaria Pascual Bravo</p>
15:20 – 15:40	<p><b>Oral On-Site Presentation ID 30:</b> Application of the Rans k-<math>\epsilon</math>; SST model in solving 3D turbulent flow problems  <b>Speaker:</b> Carlos Daniel Barrera Díaz  <b>Conference Room:</b> Auditorium Luis Alberto Cartagena, Bloque 8, Institución Universitaria Pascual Bravo</p>
15:40 – 16:00	<p><b>Oral Virtual Presentation ID 8:</b> Modeling applied to evaluate environmental indicators in the production of flanged parts using additive manufacturing: energy demand, carbon footprint and solid waste  <b>Speaker:</b> Claudinei de Souza Guimarães  <b>Conference Room:</b> Speakers room</p>
16:00 – 16:30	<b>Coffee Break</b>
16:30 – 16:50	<p><b>Oral Virtual Presentation ID 31:</b> Study of the degradation of ceramic oxide coating systems exposed to high temperatures  <b>Speaker:</b> Kelimar Belisario  <b>Conference Room:</b> Speakers room</p>
16:50 – 17:10	<p><b>Oral Virtual Presentation ID 33:</b> Comparative analysis of compression tests on honeycomb, beetle elytra plate, and Biomimetically enhanced beetle elytra plate using Ansys and Abaqus simulations  <b>Speaker:</b> Germán Orlando Romero Suárez  <b>Conference Room:</b> Speakers room</p>
17:10 – 17:30	<p><b>Oral Virtual Presentation ID 35:</b> Exploratory study of the 4MAT system in the teaching of forensic physics in criminalistics  <b>Speaker:</b> Janeth Fernandez Pinto  <b>Conference Room:</b> Speakers room</p>
17:30 – 17:50	<p><b>Oral Virtual Presentation ID 34:</b> Simulation of phase change materials for a dual heating and cooling system in extreme climates of Canada  <b>Speaker:</b> Germán Orlando Romero Suárez  <b>Conference Room:</b> Speakers room</p>
17:50 – 18:10	<p><b>Oral Virtual Presentation ID 36:</b> Preliminary study on the penetration depth of a 12 mm caliber AXOR non-lethal shotgu  <b>Speaker:</b> Janeth Fernandez Pinto  <b>Conference Room:</b> Speakers room</p>

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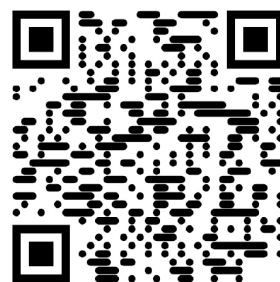
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