



# MATHEMATICS AND COMPUTER SCIENCE AT THE UNIVERSITY OF HAVANA

CUBA CONFERENCE RUTGERS UNIVERSITY  
MATCOM 2017



**Two careers of excellence :**  
Mathematics and Computer  
Science

**Three Master Programs :**  
Mathematical Sciences (Excellence,  
Award of AUIP), Computer Science,  
Bio-statistics

**One doctoral Program:**  
Mathematical Sciences

**Opening soon:** Computer Science



**63 Faculties**

**33 PhD**

**25 Young graduate faculties**

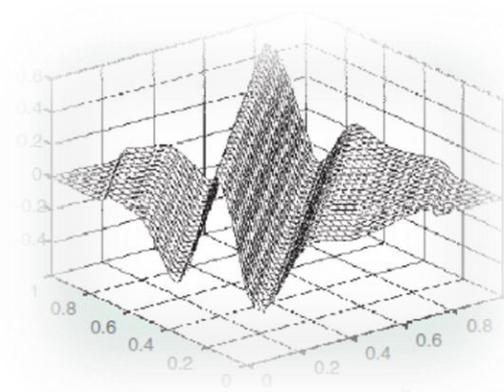


**Probability and  
Statistics**

**Computer Graphics**

**Optimization**

**Database and  
information  
retrieval**



**Numerical  
Mathematics**

**Artificial  
Intelligence**

**Differential  
Equations and  
applications**

**Mechanic of Solids**

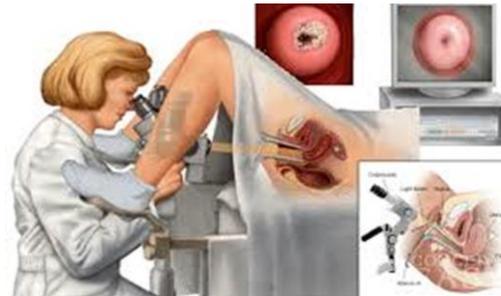
# GREAT IMPACT IN HEALTH AND ENVIRONMENT

**Mathematical models to  
forecast cardiological risks or to  
study health, environment and  
human development  
Statistics predictions**

Dr. Vivian Sistachs [vivian@matcom.uh.cu](mailto:vivian@matcom.uh.cu)  
Dr. Carlos Bouza [bouza@matcom.uh.cu](mailto:bouza@matcom.uh.cu)

**Bio-medical models,  
epidemiological illnes,  
AIDS, Dengue**

Dra. Aymee Marrero [aymee@matcom.uh.cu](mailto:aymee@matcom.uh.cu)



**Processing of medical images,  
Diagnosis Tools for Doctors for  
cervix and breast cáncer  
diagnosis.  
Applications in Meteorology,  
Forecasts**

Dr. Marta L. Bager [mbager@matcom.uh.cu](mailto:mbager@matcom.uh.cu)  
Dr. Angela León [angela@matcom.uh.cu](mailto:angela@matcom.uh.cu)

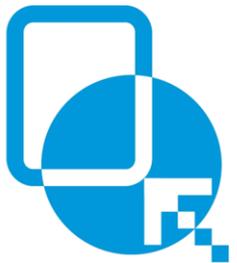
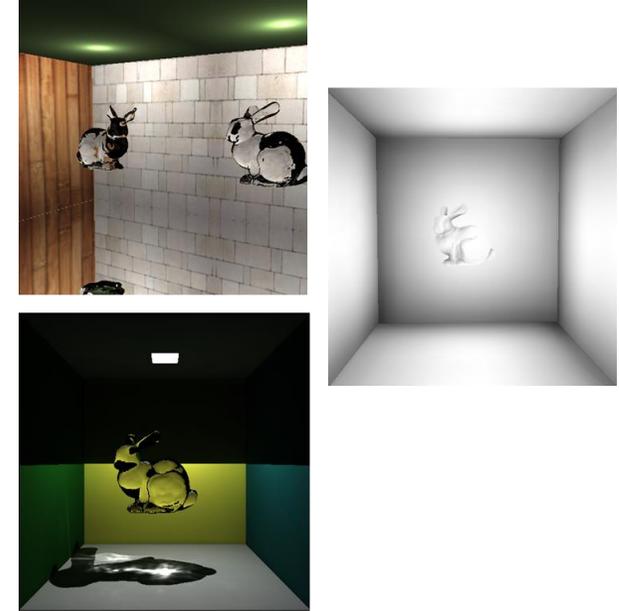
**Biomechanic modeling to study  
the growth and evolution of  
tumors**

Dr. Raúl Guinovart [guino@matcom.uh.cu](mailto:guino@matcom.uh.cu)

# COMPUTER GRAPHICS AND IMAGE PROCESSING

Accelerating Global Illumination.  
Photon-mapping and Ray-tracing  
Implemented for the GPU and the  
rasterization process.

MSc. Ludwig Leonart [leonart@matcom.uh.cu](mailto:leonart@matcom.uh.cu)



Images  
TEAM



Image Processing  
Deblurring, Contrast  
Enhancement, Segmentation,  
Edge Detection

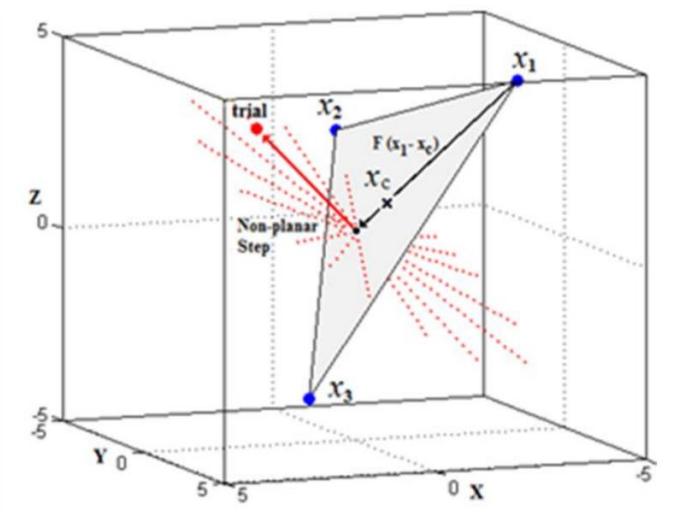
Dr. Angela León [angela@matcom.uh.cu](mailto:angela@matcom.uh.cu)

Dr. Marta L. Baguer [mbaguer@matcom.uh.cu](mailto:mbaguer@matcom.uh.cu)

# IMPACT IN ECONOMICS

Heuristic methods for logistic problems (vertex & arc routing problems). Applications

Dra. Sira Allende [sira@matcom.uh.cu](mailto:sira@matcom.uh.cu)



Data processing in business Analytics model for logical representation in decision making.  
Data integration for heterogeneous content management

Dra. Lucina García [lucina@matcom.uh.cu](mailto:lucina@matcom.uh.cu)

# CONTRIBUTING TO SOCIAL STUDIES

**Modeling the rumor  
propagation**

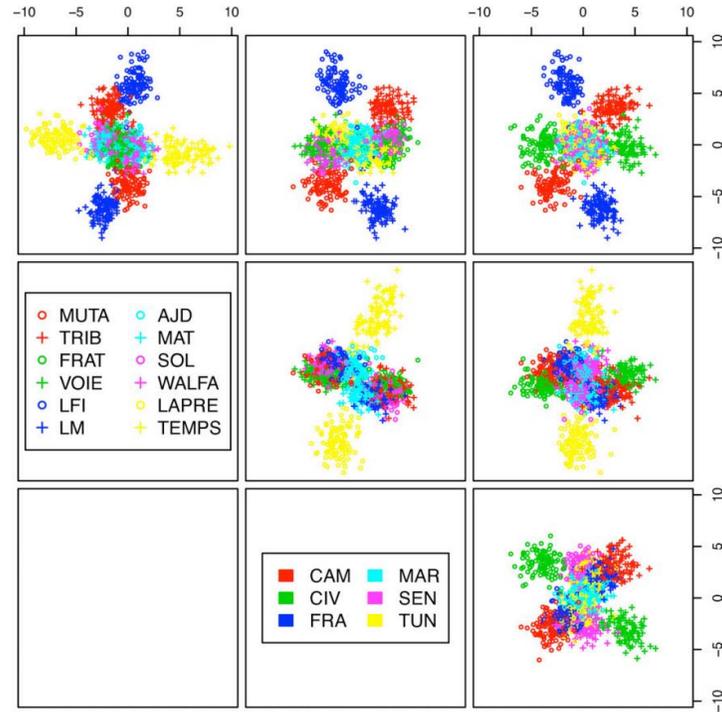
Dra. Gemayqzel Bouza [gema@matcom.uh.cu](mailto:gema@matcom.uh.cu)



**Information analysis on  
social networks**

Dr. Yudivián Almeida [yudy@matcom.uh.cu](mailto:yudy@matcom.uh.cu)  
MSc. Suilán Estévez [sestevez@matcom.uh.cu](mailto:sestevez@matcom.uh.cu)  
MSc. Alejandro Piad [apiad@matcom.uh.cu](mailto:apiad@matcom.uh.cu)

# STUDYING OUR LANGUAGE



Dr. Luciano García [luciano@matcom.uh.cu](mailto:luciano@matcom.uh.cu)  
Dr. Yudivián Almeida [yudy@matcom.uh.cu](mailto:yudy@matcom.uh.cu)

**CORESPUC, join Project with  
the Faculty of Arts and Letters  
Topics, Biber Metodology,  
Lexicographic analysis**

Dra. Marta L. Baguer [mbaguer@matcom.uh.cu](mailto:mbaguer@matcom.uh.cu)  
MSc. Damián Valdés [dvs89cs@matcom.uh.cu](mailto:dvs89cs@matcom.uh.cu)

**Text Mining and Natural  
Language Processing,  
computational linguistics and  
information extraction**

# DEVELOPING THE COMPUTER SCIENCE

**Machine Learning and  
Deep Learning algorithms**

Dr. Yudivián Almeida [yudy@matcom.uh.cu](mailto:yudy@matcom.uh.cu)  
MSc. Suilán Estévez [sestevez@matcom.uh.cu](mailto:sestevez@matcom.uh.cu)  
MSc. Alejandro Piad [apiad@matcom.uh.cu](mailto:apiad@matcom.uh.cu)

**Information retrieval, Recommendation  
systems,  
Textual recognition and disambiguation,  
Knowledge Management and  
Technologies, Outlier detection**

**Data processing in business intelligence  
solutions,  
Analytics model for logical representation in  
decision making,  
Data integration for heterogeneous content  
management**

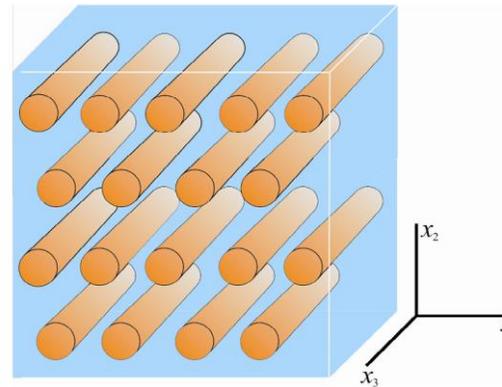
Dra. Lucina García [lucina@matcom.uh.cu](mailto:lucina@matcom.uh.cu)  
MSc. Martha Montes [martha@matcom.uh.cu](mailto:martha@matcom.uh.cu)



# NEW MATERIALS AND THEIR PROPERTIES

**Micro-macro mechanical methods to study the behaviour of materials**

**Computing the effective properties of composite materials**



**Study of the properties of poroelastic media and crack propagation**

**Waves propagation in magneto-electric-elastic fields**

Dr. Raúl Guinovart [guino@matcom.uh.cu](mailto:guino@matcom.uh.cu)

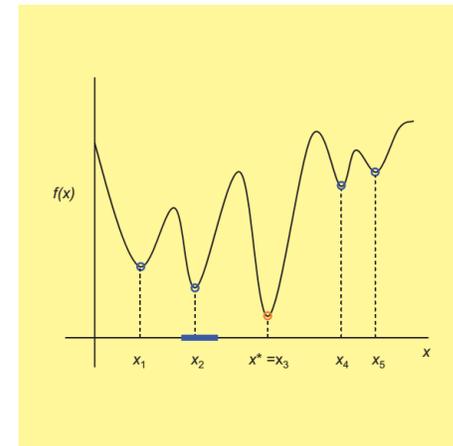
Reinaldo Rodríguez [reinaldo@matcom.uh.cu](mailto:reinaldo@matcom.uh.cu)

Dr. Juan Carlos López [jcrealpozo@matcom.uh.cu](mailto:jcrealpozo@matcom.uh.cu)

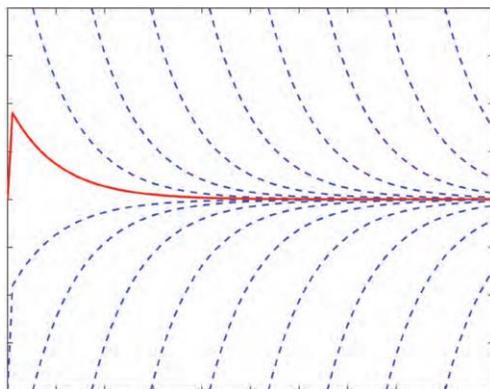
# DIFFERENTIAL EQUATIONS, OPTIMIZATION AND APPLICATIONS

## BASIC RESEARCH

Diffusive instability, pattern formation, waves in reaction-diffusion models of natural sciences; Bifurcation and perturbation methods in dynamical systems; Fuzzy dynamical systems.



Dr. Mariano Rodríguez Ricard [rricard@matcom.uh.cu](mailto:rricard@matcom.uh.cu)



Problems with equilibrium constraints  
(bilevel problems)  
Vector optimization with variable order

Dra. Gemayqzel Bouza [gema@matcom.uh.cu](mailto:gema@matcom.uh.cu)



# INNOVATIVE IDEAS AND YOUNG ENTREPRENEURS

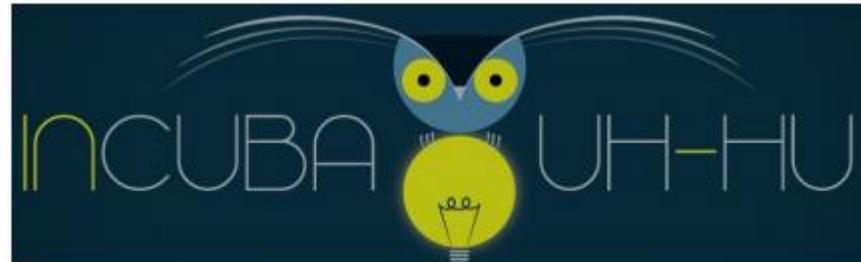
MICRO CLUSTERS

AERO  
INSPECTION BY  
DRONES

IMAGES

AUTOEXAM

<b>Key Partners</b> ... to increase efficiency and value of the business	<b>Key Activities</b> ... to bring the product/services to the market	<b>Value Propositions</b> ... to create value for the customer – different from rivals ... how does it differ from rivals?	<b>Customer Relationships</b> ... to approach and retain the customer	<b>Customer segments</b> ... to decide about mass, niche or differentiated marketing ... which segments do you approach?
	<b>Key Resources</b> ... necessary to produce/sell the product ... investments?		<b>Channels</b> ... to bring the product to the customer ... which channels do you use?	
<b>Cost structure</b> ... to understand most important costs in the business ... height of fixed & variable costs? Unit costs?			<b>Revenue structure</b> ... to understand how to be profitable with the business idea ... prices and quantities for each product? Profitability?	



STARTUP WEEKS

MSc. Suilán Estévez [sestevez@matcom.uh.cu](mailto:sestevez@matcom.uh.cu)  
MSc. Alejandro Píad [apiad@matcom.uh.cu](mailto:apiad@matcom.uh.cu)

# 13<sup>th</sup> INTERNATIONAL CONFERENCE

on

## OPERATIONS RESEARCH

Havana; March 6-9, 2018

<http://77rev-inv-ope.univ-paris1.fr/>

**Devoted to the 290th Onomastic of Universidad de La Habana 1728-2018**

**Plenary Themes:** Optimization, Probability and Statistics, Mathematical Economic, Algorithms, Teaching on Operations Research

### **Organized by:**

Universidad de La Habana  
Université Paris 1, Panthéon-Sorbonne

### **Co sponsors:**

Asociación Mexicana de Estadística (AME)  
American Statistical Association (ASA)  
Sociedad Cubana de Matemática y Computación (SCMATCOM- Investigación Operacional).

### **Registration and General Information**

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