

XVIII SPANISH-FRENCH SCHOOL JACQUES-LOUIS LIONS ABOUT NUMERICAL SIMULATION IN PHYSICS AND ENGINEERING



Conference Programme

25-29 June, 2018
Universidad de Las Palmas de Gran Canaria, Spain


<http://ehf2018.iusiani.ulpgc.es>

E-mail: ehf2018@ulpgc.es

SēMA



Parque Científico Tecnológico
Universidad de Las Palmas de Gran Canaria

 UNIVERSIDAD DE LAS PALMAS DE GRAN CANARIA
Departamento de Matemáticas
Departamento de Ingeniería Civil





XVIII SPANISH-FRENCH SCHOOL JACQUES-LOUIS LIONS ABOUT NUMERICAL SIMULATION IN PHYSICS AND ENGINEERING

Chair:

[Rosa Donat](#) - President of SeMA, (University of Valencia, UV)

[Thierry Horsin](#) - President of SMAI, (Conservatoire National des Arts et Métiers, CNAM)

[David Greiner](#) - (Universidad de Las Palmas de Gran Canaria, ULPGC)

Poster Session Chair:

[Mabel Asensio](#) (University of Salamanca, USAL)

Scientific Committee:

[Rafael Bru](#) (Polytechnic University of Valencia)

[Maria Esteban](#) (Paris Dauphine University)

[Mariano Mateos](#) (University of Oviedo)

[Yvon Maday](#) (University of Pierre et Marie Curie - ParisVI)

[François Murat](#) (University of Pierre et Marie Curie - ParisVI)

[Carlos Parés](#) (University of Málaga)

[Olivier Pironneau](#) (University of Pierre et Marie Curie - ParisVI)

[Gabriel Winter](#) (Universidad de Las Palmas de Gran Canaria)

Organizing Committee:

[José Manuel Cascón](#) (USAL)

[Felipe Díaz](#) (ULPGC)

[José María Escobar](#) (ULPGC)

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[Albert Oliver](#) (ULPGC)

[Eduardo Rodríguez](#) (ULPGC)

[José Pablo Suárez](#) (ULPGC)

[María Belén López](#) (ULPGC)



Venue



Humanities Building – Agustín Millares Carlo
Campus del Obelisco
Universidad de Las Palmas de Gran Canaria
Calle de Pérez del Toro, 1
35003 Las Palmas de Gran Canaria, Las Palmas,
España
T. (+34) 928452943

All the Spanish-French School activities will be held in the Main Room (Salón de Actos), located at the entrance of the building, and Room number 22 (Aula 22), located on the second floor.

The name of the open Wifi Network is ULPGC.
Also EDUROAM Wifi is available.





**XVIII SPANISH-FRENCH SCHOOL JACQUES-LOUIS LIONS
ABOUT NUMERICAL SIMULATION IN PHYSICS AND ENGINEERING**

Time	Monday	Tuesday	Wednesday	Thursday	Friday
9.00-9.15	Opening				
9.15-10.15	Conference 1 L. Ferragut	Conference 2 J. Periaux	Conference 3 R. Herbin	Conferences 1. SeMA Young Investigator Award 2017 J. Gómez 2. Best SeMA Thesis selected for ECCOMAS Award 2017 A. Moure	Special Session 1
10.15-10.45	Coffee-Break	Coffee-Break	Coffee-Break	Coffee-Break	Coffee-Break
10.45-12.45	Course 1(a) F. Hecht	Course 1(b) F. Hecht	Course 3(a) P. Destuynder	Course 3(b) P. Destuynder	Special Session 2 and Closing
12.45-14.00	Lunch	Lunch	Lunch	Lunch	Lunch
14.00-16.00	Course 2 (a) H. Gómez	Course 2(b) H. Gómez	Course 4(a) J. Sarrate	Course 4(b) J. Sarrate	
16.00-16.30	Coffee-Break	Coffee-Break	Coffee-Break	Coffee-Break	
16.30-18.10	Poster Session 1	Poster Session 2	SEMA Assembly	Conferences 1. Best Paper SEMA Journal 2016 S. Nicaise 2. Best Paper SEMA Journal 2017 P. Pedregal	
20.30			Conference Dinner		



XVIII SPANISH-FRENCH SCHOOL JACQUES-LOUIS LIONS ABOUT NUMERICAL SIMULATION IN PHYSICS AND ENGINEERING

Monday, June 25th.

09:00: Opening.

José Pablo Suárez Rivero, Vice-rector of Research of ULPGC
Rosa Donat , President of SeMA
Thierry Horsin, President of SMAI
Rafael Montenegro, Director of University Institute SIANI
David Greiner, Chairman of XVIII Spanish-French School

9:15: Conference 1.

“Numerical methods for free boundary problems”
Luis Ferragut
University of Salamanca, ferragut@usal.es
Session Chairman: Rafael Montenegro

10:15: Coffee Break.

10:45: Course 1 (1/2 part).

“Numerical Simulation in Physics and Engineering with freefem++”
Frédéric Hecht
University of Pierre et Marie Curie – ParisVI, frederic.hecht@upmc.fr

12:45: Lunch

14:00: Course 2 (1/2 part).

“Computational Phase-field Modeling: Applications in Fluids, Solids and Biomechanics”
Héctor Gómez
Purdue University, hectorgomez@purdue.edu

16:00: Coffee Break.

16:30: Poster Session 1. (Time for each poster presentation: 5 min)

Poster Number 1:

Title: Modeling and simulation of ellipsoidal droplets growing on patterned substrates during dropwise condensation.
Authors: S. Boroomandi Barati, J.C. Pinoli, S. Valette, Y. Gavet.

Poster Number 2:

Title: Modelling of bedload sediment transport for weak and strong flow regimes.
Authors: E.D. Fernández-Nieto, G. Narbona-Reina, T. Morales de Luna and C. Escalante.

Poster Number 3:

Title: Spectral Variational Multi-Scale methods for two-dimensional convection-diffusion problems.
Authors: T. Chacón Rebollo, S. Fernández-García and M. Gómez-Mármol.

Poster Number 4:

Title: Reduced Basis Method for natural convection in a variable height cavity.
Authors: T. Chacón Rebollo, E. Delgado Ávila and M. Gómez Mármol.



Poster Number 5:

Title: An inverse problem governed by the Lamè System: tumor identification.
Authors: Enrique Fernández-Cara and Faustino Maestre.

Poster Number 6:

Title: Optimal Intraregional Location of Emissions in a Transboundary Pollution Dynamic Game.
Authors: Javier de Frutos, Paula M. López-Pérez, Guiomar Martín-Herrány.

Poster Number 7:

Title: Nonlinear subdivision in Uncertainty Quantification.
Authors: Antonio Baeza, Rosa Donat, Sergio López-Ureña.

Poster Number 8:

Title: Tumor development model with vasculature.
Authors: A. Fernández Romero, F. Guillén González and A. Suárez Fernández.

Poster Number 9:

Title: Energy stable numerical schemes for a chemo-repulsion model with linear production term.
Authors: F. Guillén-González, M. A. Rodríguez-Bellido and D. A. Rueda-Gómez.

Poster Number 10:

Title: A two-layer shallow flow model with two axis of integration for submarine avalanches.
Authors: J.M. Delgado-Sánchez, E.D. Fernández-Nieto, G. Narbona-Reina.

Poster Number 11:

Title: PILEDYN: a boundary element - finite element software package for PILE group linear DYNamic analysis.
Authors: M.Castro, J.D.R.Bordón, C.Medina, G.M. Álamo, F.González, F.García, L.A.Padrón, J.J.Aznárez and O.Maeso.

Poster Number 12:

Title: Delay control of reaction-diffusion equations.
Authors: Eduardo Casas, Mariano Mateos and Fredi Tröltzsch.

(End of the poster presentations at 17:30 approximately, and then it will take place the poster exhibition with the authors until 18:10)





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Tuesday, June 26th.

9:15: Conference 2.

“Nash Games and Evolutionary Algorithms for solving CFD design optimization problems:
Applications to the drag reduction of a Natural Laminar Airfoil using a Control Bump Active device at
transonic shocked flow regimes”

Jacques Periaux

University of Jyväskylä and CIMNE, jperiaux@gmail.com

Session Chairman: David Greiner

10:15: Coffee Break.

10:45: Course 1 (2/2 part).

“Numerical Simulation in Physics and Engineering with freefem++”

Frédéric Hecht

University of Pierre et Marie Curie – ParisVI, frederic.hecht@upmc.fr

12:45: Lunch

14:00: Course 2 (2/2 part).

“Computational Phase-field Modeling: Applications in Fluids, Solids and Biomechanics”

Héctor Gómez

Purdue University, hectorgomez@purdue.edu

16:00: Coffee Break.

16:30: Poster Session 2. (Duration of each exposition – 5 min)

Poster Number 13:

Title: Numerical simulations of fire-spotting: flame characteristics formulation.

Authors: V.N. Egorova, A. Trucchia and G. Pagnini.

Poster Number 14:

Title: A Boussinesq model for thermodynamics simulations of eco-efficient courtyards.

Authors: F.J. Carmona-Molero, E.D. Fernández-Nieto and S. Rubino.

Poster Number 15:

Title: Convergence rate of an asymptotic preserving scheme for the limit of the p-system with damping.

Authors: S. Bulteau, C. Berthon, M. Bessemoulin-Chatard.

Poster Number 16:

Title: Surrogate-based analysis of turbulence and fire-spotting in wild-land fire modelling.

Authors: A. Trucchia, V.N. Egorova, M. Rochoux and G. Pagnini.

Poster Number 17:

Title: Tensor Empirical Interpolation Method for multivariate functions.

Authors: Asma Toumi, Florian De Vuyst.

Poster Number 18:

Title: Time-parallel algorithm for two phase flows simulation.



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Authors: K. Ait Ameury, Y. Maday and M. Tajchman.

Poster Number 19:

Title: Review of numerical schemes for the classical Keller-Segel system.

Authors: Alba M. Navarro Izquierdo, M. Victoria Redondo Neble and J. Rafael Rodríguez Galván.

Poster Number 20:

Title: Automatic construction of a parametric domain for the adaptive Meccano triangulation of objects with genus-zero surfaces.

Authors: Guillermo V. Socorro-Marrero, Rafael Montenegro and Albert Oliver.

Poster Number 21:

Title: A proposed methodology of wind simulation over complex orography and applications on mountains of Agüimes, Gran Canaria, Spain.

Authors: J. Abdelfatah, G. Winter and B. Gonzalez.

Poster Number 22:

Title: A Well-balanced Finite Volume Scheme for Shallow Water Equations with Porosity.

Authors: Minh H. Le, Virgile Dubos, Marina Oukacine and Nicole Goutal.

Poster Number 23:

Title: Numerical simulation of a thermo-hydro-mechanical problem in steel industry.

Authors: P. Barral, L.J. Pérez-Pérez and P. Quintela.

Poster Number 24:

Title: UNAMalla: a system for generating quality structured meshes on irregular plane regions.

Authors: D.Pablo Barrera, Guilmer González Flores, Gustavo García Cano, Isidro Abelló Ugalde and Victoria Hernández Mederos.

(End of the poster presentations at 17:30 approximately, and then it will take place the poster exhibition with the authors until 18:10)





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Wednesday, June 27th.

9:15: Conference 3.

“Staggered schemes for compressible flows”

Raphael Herbin

Aix-Marseille Université, raphaele.herbin@univ-amu.fr

Session Chairman: Rosa Donat

10:15: Coffee Break.

10:45: Course 3 (1/2 part).

“Aeroelasticity and Dynamical Systems”

Philippe Destuynder

Conservatoire National des Arts et Métiers, phdestuynder@gmail.com

12:45: Lunch

14:00: Course 4 (1/2 part).

“A Brief Introduction to Mesh Generation”

José Sarrate

Polytechnic University of Catalonia, jose.sarrate@upc.edu

16:00: Coffee Break.

16:30: SEMA Assembly.

18:10: End of SEMA Assembly.

19:15: Bus departure to School Dinner from Reina Isabel Hotel.

19:30: Bus departure to School dinner from Humanities Building– Agustín Millares Carlo.

20:00: Visit to “Caldera de Bandama”.

20:30: School Dinner at “Bodega El Parral” - *Camino Los Lagares, Trasera 15 Bis*

(More information of School Dinner at the end of the Programme)



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Thursday, June 28th.

9:15: Conferences. (SeMA Young Investigator Award 2017)

“Computer-Assisted Proofs in Partial Differential Equations”

Javier Gómez Serrano

Princeton University, jg27@math.princeton.edu

Session Chairman: Rosa Donat

9:45: Conferences. (Best SeMA Thesis selected for ECCOMAS Award 2017)

“Phase-field modeling and isogeometric analysis of cell crawling”

Adrián Moure

Purdue University, amourero@purdue.edu

Session Chairman: Rosa Donat

10:15: Coffee Break.

10:45: Course 3 (2/2 part).

“Aeroelasticity and Dynamical Systems”

Philippe Destuynder

Conservatoire National des Arts et Métiers, phdestuynder@gmail.com

12:45: Lunch

14:00: Course 4 (2/2 part).

“A Brief Introduction to Mesh Generation”

José Sarrate

Polytechnic University of Catalonia, jose.sarrate@upc.edu

16:00: Coffee Break.

16:30: Conferences. (Best Paper SEMA Journal 2016)

“Regularity of solutions of elliptic problems with Dirac measures as data.”

Serge Nicaise

Université de Valenciennes, snicaise@univ-valenciennes.fr

17:00: Conferences. (Best Paper SEMA Journal 2017)

“Variational methods for non-variational problems”

Pablo Pedregal

Universidad de Castilla-La Mancha, pablo.pedregal@uclm.es



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Friday, June 29th.

9:15: Special Session 1.

Introduction of the special sessions: Conferences of former students of Prof. Luis Ferragut.

“The Meccano Method for Mesh Generation and Solid Parameterization”

R. Montenegro*, J.M. Cascón, J.M. Escobar, E. Rodríguez, A. Oliver, G. Montero, M. Brovka, J.I. López and D. Benítez.

“Longest-Edge N-Section for Mesh Refinement, Properties and Open Problems”

José Pablo Suárez*, Agustín Trujillo, Ángel Plaza and Tania Moreno.

“Neptuno ++: An Adaptive Finite Element Toolbox for Numerical Simulation of Environmental Problems”

J. M. Cascón*, L. Ferragut, M. I. Asensio, D. Prieto and D. Álvarez.

10:15: Coffee Break.

10:45: Special Session 2 and Closing.

“Some Proposals on 3D Simulation of Air Velocity and Temperature Evolution in Buildings”

G. Winter*, J. Abdelfatah, A. Ramos and V. Henríquez.

“A High Resolution Diagnostic Wind Model. Application to Downscaling Mesoscale Model Results for Wind Forecasting”

G. Montero*, R. Montenegro, J.M. Escobar, E. Rodríguez, A. Oliver and A. Suárez.

“Optimal Electrode Design of Cochlear Implants using Multiobjective Optimization”

J.M. Escobar*, A. Ramos-de-Miguel, D. Greiner and A. Ramos-Macias.

“Multiobjective Optimum Design for Engineering Applications”

D. Greiner*, J. M. Emperador, B. Galván, F. Chirino, R. Toledo, J. J. Aznárez, O. Maeso and G. Winter.

“Forest Fire Simulation: From the Model to the GIS Integrated Tool”

M.I. Asensio*, L. Ferragut, J.M. Cascón, D. Prieto and D. Álvarez.

“Numerical models for near explosions. Effects on structures”

A.P. Santos*, R. Castedo, L. Ma. López, M. Bermejo and M. Chiquito.

“Solar Radiation Modelling and Forecasting”

F. Díaz, G. Montero, R. Montenegro, L. Mazorra Aguiar, E. Rodríguez* and J.M. Escobar.

12:45: Closing and Lunch



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School Dinner Information

19:15: Bus departure to School Dinner from Reina Isabel Hotel.

19:30: Bus departure to School dinner from Humanities Building– Agustín Millares Carlo.

20:00: Visit to “Caldera de Bandama”.

20:30: School Dinner at “Bodega El Parral” - *Camino Los Lagares, Trasera 15 Bis*



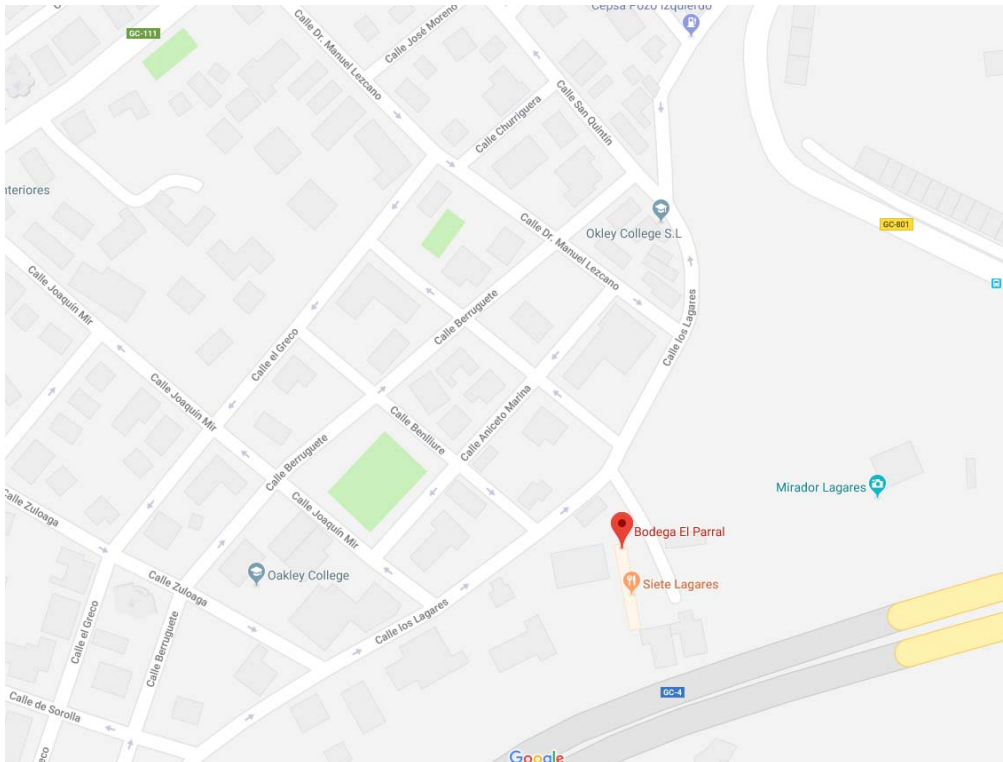
Caldera de Bandama



Bodega El Parral



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