

CMN 2017

Congress on Numerical Methods in
Engineering

PROGRAMME

3-5 July, 2017

Universitat Politècnica de València



Welcome message

On behalf of the CMN2017 organizing committee we are pleased to welcome you to Valencia for the Congress on Numerical Methods in Engineering (CMN 2017) held at 'Campus de Vera' of the Universitat Politècnica de València.

The Congress on Numerical Methods in Engineering takes place biennially and is jointly organized by the "Sociedad Española de Métodos Numéricos en Ingeniería" (SEMNI, Spain) and the "Associação Portuguesa de Mecânica Teórica, Aplicada e Computacional" (APMTAC, Portugal). This conference follows the previous congress editions of Madrid (2002), Lisbon (2004), Granada (2005), Porto (2007), Barcelona (2009), Coimbra (2011), Bilbao (2013) and Lisbon (2015).

We want to express our appreciation to all members of the committees, to all thematic session organizers, to all the staff who are managing the different aspects of the Congress and to all the contributing authors and participants.

We hope you will have a warm welcome to Valencia and all of you feel rewarded for your participation and contribution.

Valencia, July 2017

Irene Arias

Paulo Lourenço

Jesús María Blanco

Paulo Flores

Manuel Tur Valiente

Stéphane Clain

Organizing institutions

The logo for SEMNI (Sociedad Española de Métodos Numéricos en Ingeniería) consists of the letters 'SEMNI' in a bold, blue, sans-serif font.The logo for APMTAC (Associação Portuguesa de Mecânica Teórica, Aplicada e Computacional) consists of the letters 'APMTAC' in a blue, sans-serif font, with a vertical bar separating 'APM' and 'TAC'.

Congress Organization

Organizing committee:

SEMNI

Irene Arias
Jesús María Blanco
Manuel Tur Valiente

APMTAC

Paulo Lourenço
Paulo Flores
Stéphane Clain

Local organizers:

Centro de Investigación en Ingeniería Mecánica - Universitat Politècnica de València

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Eugenio Giner Maravilla
José Albelda Vitoria
Ana Vercher Martínez

Juan José Ródenas García
Francisco D. Denia Guzmán
Ana Pedrosa Sánchez
José E. Tarancón Caro

Scientific Committee

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Carlos Pina (LNEC)
João Rocha Almeida (UNL)
Helder Rodrigues (IST/UTL)
Adélia Sequeira (IST/UTL)
Paulo Vila Real (UA)

Congress information

Congress venue

The Congress on Numerical Methods in Engineering (CMN 2017) takes place at:

Universitat Politècnica de València
Campus de Vera
Camino de Vera s/n
46022 Valencia

The conference will be held at the NEXUS Building (6G building) and at the Technical School of Design Engineering, ETSID (7B building). You can get in via the campus entrance L, from Avenida de los Naranjos by car, by taxi (UPV-Galileo Galilei), by bus (EMT-41) or tramway (Line 4 – Tarongers stop).

NEXUS



ETSID



Coffee break

The morning coffee-breaks will take place in the hall of NEXUS building (see map). The afternoon coffee-breaks will take place in the ETSID. You are kindly reminded to wear your Conference Badge.

Lunch

The Lunch tickets included in the package received during the registration will be honored at the restaurants in the list below, which are located in TRINQUET and GALILEO GALILEI (see map). The participants can choose the standard menu of the restaurant within the price range of the lunch tickets, otherwise the exceeded amount must be paid. Note that the lunch tickets have different colors for the different days and are valid only for the day printed in the front.

List of restaurants:

Trinquet: Self-service menu + coffee

Capacity: 350

Galileo Galilei:

Cervecería CAMPUS: menu + coffee

Capacity: 100

La Piazzetta delle Delizie: menu or sandwich + coffee

Capacity: 50

#Bocalinda: menu or sandwich + coffee

Capacity: 50

Come a tu gusto: menu or sandwich + coffee

Capacity: 50

Two Day: menu or sandwich + coffee

Capacity: 50



Social programme

Welcome reception – Monday, June 3rd, 19.00 h – 20.30 h

The welcome reception will be held in the Centre Cultural la Beneficència, located in the old city center (Carrer de la Corona, 36). Founded in 1520, It was an ancient Augustinian and Franciscan monastery, dedicated to the veneration of the crown of thorns (hence the name of the street). After the reception there will be guided walking tours through the historical centre of Valencia.

Shuttle buses will be provided departing from UPV Gate L, close to the Galileo Galilei building.



Congress dinner – Wednesday, June 5th, 21.00 h

The congress banquet will take place at the Veles e Vents restaurant located close to the canal of the Marina Real Juan Carlos I of Valencia. It was Designed by David Chipperfield and Fermín Vázquez with a simple, minimalist style.

To get there, you can take the tramway (Line 8, Marina Reial stop) or the taxi. Please do not forget to bring your Banquet Vouchers.



UPV



ACCESS GATE L

Avenida los Naranjos – Parking car
Taxi – UPV, Galileo Galilei
Bus – EMT 41
Tramway – Tarongers stop



TRINQUET

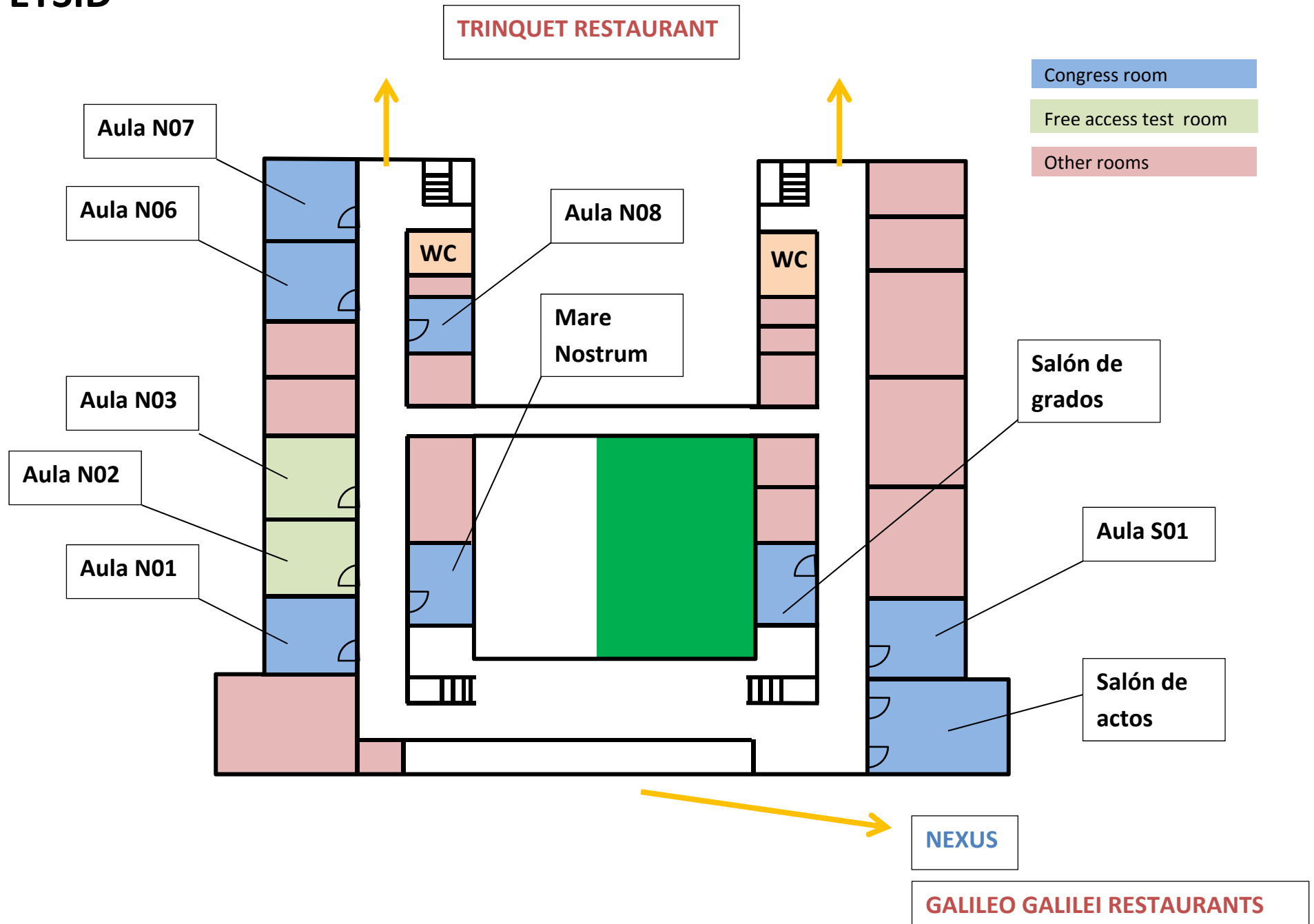
ETSID

GALILEO
GALILEI

ACCESS GATE L

NEXUS

ETSID



Internet access

- Eduroam
- Personal temporal UPVNET account allowing internet connection will be provided in the congress bag.

Free access test room

Aula N02 and **Aula N03** are free access rooms with PCs and internet connection. You can login using the temporal UPVNET account provided in the congress bag.

Instructions for Presenters

Each Oral presentation will take 15 minutes including discussion (12 for presentation + 3 for discussion). Presentations can be either in English, Portuguese or Spanish.

The files required for the presentation (PowerPoint or PDF) must be uploaded and tested in the computer of the room where the presentation will take place before the beginning of the session. A standard VGA video connection will be available if you want to use your computer for the presentation (please bring your own switch if you have a different connector).

The following software will be installed in the computers of the conference rooms:

Aula N01, Aula Air Nostrum, Aula N06, Aula N07, Aula N08

Windows 10 + Office 2016 + Acrobat PDF reader

Salón de Actos, Salón de Grados, Aula S01

Windows 7 + Office 2013 + Acrobat PDF reader

Poster session

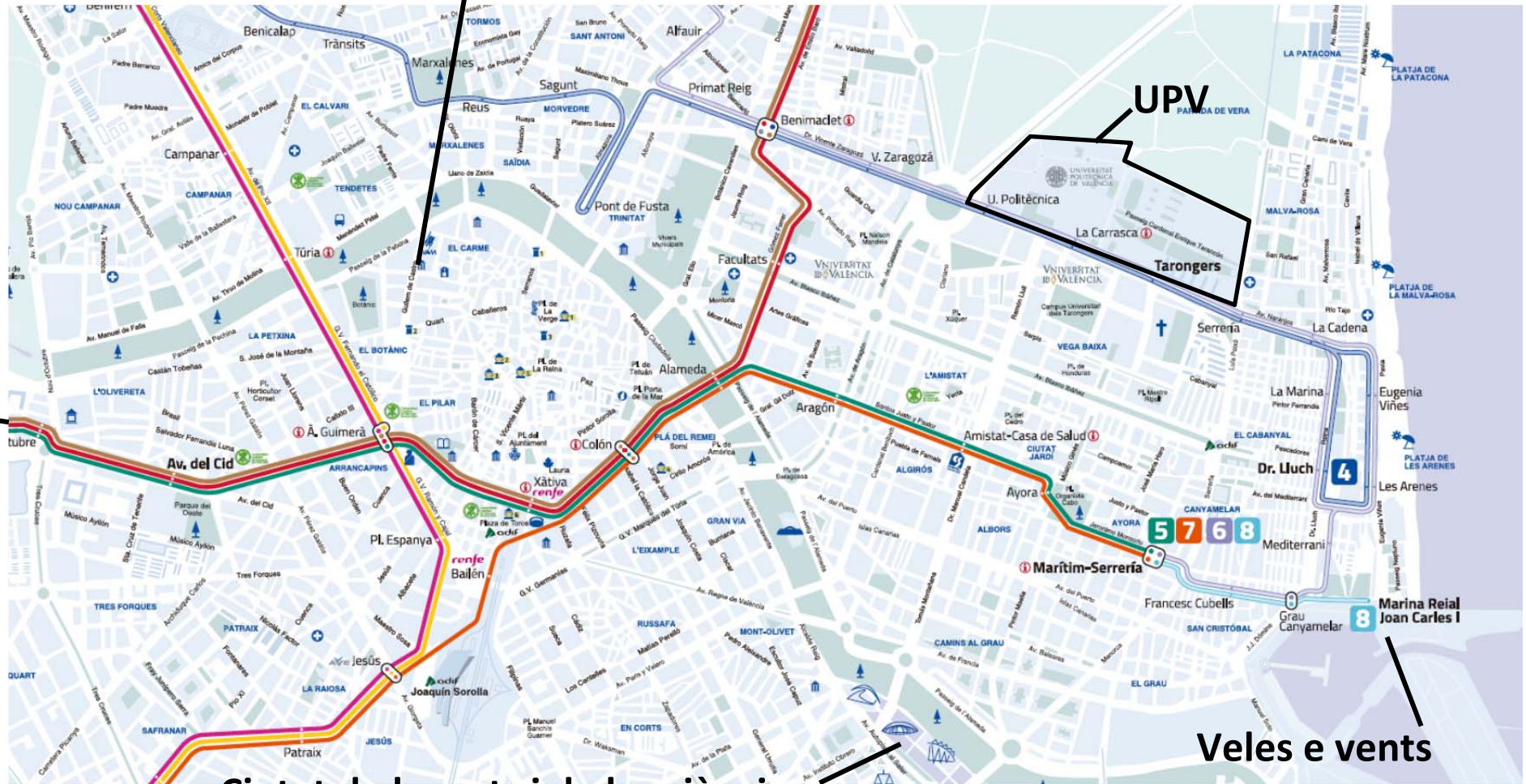
Poster panels will be provided by the organization. The poster session will be held at the room next to the Nexus conference hall.

Map of Valencia

Centre cultural
La beneficència

UPV

Airport



Ciutat de les arts i de les ciències

Veles e vents

Marina Reial
Joan Carles I

CMN2017 - Programme

Time	Monday July, 3 rd	Tuesday July, 4 th	Wednesday July, 5 th
9.00	Registration	Plenary lecture 3 J.F. Remacle	Plenary lecture 5 M. Casteleiro
9.45		Plenary lecture 4 F. Chinesta	Plenary lecture 6 N. Silvestre
10.30		Poster session 1 Coffee break	Poster session 2 Coffee break
11.30		Parallel session 2 11.30 – 13.00	Parallel session 5 11.30 – 13.00
13.00		Lunch	Lunch
14.30	Opening ceremony	Parallel session 3 14.30 – 16.00	Parallel session 6 14.30 – 16.00
15.00	Plenary lecture 1 M. Arroyo		
15.45	Plenary lecture 2 M. Nobrega	Coffee break	Coffee break
16.30	Coffee break	Parallel session 4 16.30 – 18.00	Parallel session 7 16.30 – 18.00
17.00	Parallel session 1 17.00 – 18.30		
			Closing ceremony
19.00	Transport by shuttle buses		
	19.30 – 20.30 Welcome reception Guided walking tour through the historical city center	18.30 – 19.30 SEMNI / APMTAC assemblies	Congress dinner Veles e vents 21.00 - 23.30

Plenary Lecture 1: Monday, July 3rd 15.00 – 15.45*Marino Arroyo***Mathematical modeling and simulation of the cell envelop, an active and adaptable biological interface***Chair: A. Huerta***Plenary Lecture 2:** Monday, July 3rd 15.45 – 16.00*J. Miguel Nôbrega***OpenFOAM® in Polymer Processing Applications et al.***Chair: C. Mota Soares***Plenary Lecture 3:** Tuesday, July 4th 9.00 – 9.45*Jean-François Remacle***Hexahedral Mesh Generation***Chair: S.L. Clain***Plenary Lecture 4:** Tuesday, July 4th 9.45 – 10.30*Francisco Chinesta***A Manifold-Based Methodological Approach to model-Free Data-Driven Computational Elasticity and Inelasticity***Chair: E. Cueto***Plenary Lecture 5:** Wednesday, July 5th 9.00 – 9.45*Manuel Casteleiro***Stochastic techniques for the numerical solution of engineering boundary value problems***Chair: X. Oliver***Plenary Lecture 6:** Wednesday, July 5th 9.45 – 10.30*Nuno Silvestre***Graphene_ing³: Cracking, Buckling and Wrinkling***Chair: C. Pina*

Parallel sessions 1: Monday, July 3rd 17.00 -18.30

Parallel sessions 1: Monday, July 3rd 17.00 -18.30

PS1.1: Salón de actos

ST36: Soft computing for smarter operation management in water distribution systems

Chair: J. Izquierdo

490 Soft computing for smarter operation management in water distribution systems

J. Izquierdo, M. Herrera, I. Montalvo, D. Ayala-Cabrera

245 Smarter Water Network Operation Management

I. Montalvo, J. Izquierdo, M. Herrera, D. Ayala-Cabrera

363 Smart data analysis for smart water networks

M. Herrera, D. Ayala-Cabrera, J. Izquierdo, I. Montalvo

241 Criticality index for resilience analysis of water distribution networks in a context of mechanical failures

D. Ayala-Cabrera, O. Piller, M. Herrera, F. Parisini, J. Deurlein

169 A Comparison of Machine Learning Classifiers for Leak Detection and Isolation in Urban Networks

E.P. Carreño-Alvarado, G. Reynoso-meza, I. Montalvo Arango, J. Izquierdo

236 Análisis comparativo de métodos de extracción de patrones en imágenes de GPR para la localización de fugas de agua

S.J. Ocaña-Levario, E.P. Carreño-Alvarado, D. Ayala-Cabrera, J. Izquierdo

PS1.2: Salón de grados

ST31: Recent results on hybrid discontinuous Galerkin methods

Chair: S. Gomes, C. Faria, S. Malta, and A. Loula

152 The Multiscale Hybrid Method in Mixed Finite Element Context

P. Devloo, F. Valentin, S. Gomes, O. Triana

244 Stabilized Dual Hybrid Mixed Method Applied to Elliptic Problems

C. Faria, A.F. Loula, S.M. Malta

305 Métodos de Elementos Finitos Híbridos Estabilizados para Problemas de Convecção-Difusão

D.D. Ordonio, A.F. Loula, I. Igreja

334 Comparison of continuous and hybridizable discontinuous Galerkin methods in incompressible fluid flow problems

M. Paipuri, C. Tiago, S. Fernández-Méndez

459 Two-level Multiscale Hybrid Method for Elliptic Problems

D. Paredes, F. Valentin, R. Araya

168 Stokes Flow Computational Modeling and Comparative Study between Approximation Spaces

P.G. S Carvalho, P.R. B Devloo, O.D. Triana

156 A Hybrid Discontinuous Galerkin Method for Tokamak Edge Plasma Simulations

G.G. Giorgiani, E.S. Serre

PS1.3: Air Nostrum**ST16: Métodos computacionales en acústica y vibraciones***Chair: J. Ramis, J. Carbajo, L. Godinho, F.D. Denia***268 Métodos p-Adaptativos de Elementos Finitos Híbridos e Mistos para o Problema de Propagação de Ondas em Meios Heterogêneos***L.M. L. Mello, I.I. I. Igreja, A.L. A. Loula***273 A numerical study of the vibration filtering effect of periodic structures***L Godinho, J Carbajo, P Amado-Mendes, J Ramis, P Alves-Costa, A Castanheira-Pinto***276 Técnicas numéricas modales para el análisis acústico de dispositivos de escape de sección transversal arbitraria con monolito***F.D. Denia, E.M. Sánchez-Orgaz, J. Martínez-Casas, J. Carballeira***279 Modelado numérico eficiente del comportamiento acústico de silenciadores de escape con material absorbente granular***E.M. Sánchez-Orgaz, F.D. Denia, J. Martínez-Casas, L. Baeza***308 Modelo integral de interacción vehículo-vía que contempla la dinámica de baja y alta frecuencia para circulación en vía recta, transición y curva***J. Martínez-Casas, J. Carballeira, F.D. Denia, L. Baeza***313 Modelo mejorado de interacción tren-vía en curva en el dominio de la alta frecuencia***J. Giner-Navarro, J. Martínez-Casas, P. Vila, F.D. Denia, J. Carballeira***PS1.4: Aula S01****SG06: Environmental Engineering / SG07: Transport Engineering***Chair: M. Casteleiro***82 Preliminary Steps in the Modelling of Heavy Metals Phytoremediation***L.J. Alvarez-Vazquez, A. Martinez, C. Rodriguez, M.E. Vazquez-Mendez***85 Vehicular Traffic and Air Pollution in Metropolitan Areas: A Mathematical Approach***M.E. Vazquez-Mendez, L.J. Alvarez-Vazquez, N. Garcia-Chan, A. Martinez***336 Modelo bidimensional para flujo en aguas poco profundas: tratamiento con iber***R. Martínez-Cantó, A. Martínez, A. Hidalgo***406 Reconocimiento de patrones en la variación espacial de la calidad del agua a través de análisis cluster para el redimensionamiento de la red monitoreo del río Tunjuelo como herramienta de gestión del ciclo urbano del agua***C.A Peña-Guzmán, H. Luna, D. Zamora, D. Mesa***211 Un modelo numérico para cuantificar el impacto de las diferentes estrategias de conservación y mantenimiento en la vida útil de un firme flexible***M. Ruiz, L. Ramírez, F. Navarrina, M. Casteleiro***355 Modelado de la respuesta de un pavimento flexible reforzado con geoceladas, apoyado sobre una subrasante discontinua fisurada por desecación***J.A. Pineda-Jaimes, E.J. Orduz-Duarte*

PS1.5: Aula N06
ST04: Biomecánica
 Chair: F. Gabaldón

- 145 Tissue-Scale, Patient-Specific Modeling and Simulation of Prostate Cancer**
G. Lorenzo, M.A. Scott, K. Tew, TJR Hughes, H. Gomez
- 192 Nuevos Avances en la Cirugía del Dedo en Garra: Una Comparativa entre Cinco tipos de Intervenciones mediante Inclusión de Implantes**
J. Bayod, R. Becerro de Bengoa, M.E. Losa
- 264 Análisis del comportamiento de vertebras L3-L5 con prótesis lumbar implantada, bajo condición de cargas combinadas**
R. Lesso Arroyo, F. Mendoza Vázquez, R. Rodriguez CASTRO, A. Vidal Lesso
- 297 Análisis por elementos finitos del efecto de las propiedades geométricas y las condiciones biológicas de hueso maxilar en la estabilidad primaria de MI ortodónticos**
J.A. Zambrano, O.R. López, L. Jara
- 332 Damage Assessment of Spinal Bones Due to Prostate Cancer**
S.A. Ardila, H.S Sánchez, J.R. Ródenas

PS1.6: Aula N07
ST37: Steel and composite structures
 Chair: N. Lopes, M. Romero

- 81 Simulación Numérica de la Construcción de Estructuras de Edificios de Hormigón Armado**
M. Buitrago Moreno, J.M. Adam Martínez, J.J. Moragues Terrades, P.A. Calderón García, Y.A. Alvarado Vargas
- 130 Modelado y Predicción de la Respuesta de Vigas Mixtas Acero-Hormigón frente al Fuego**
J. Muñoz, P. Martí
- 293 Contribuição dos banzos para a resistência à encurvadura por esforço transversal de vigas em aço de alma cheia a temperaturas normais e elevadas**
A. Reis, N. Lopes, P. Vila Real
- 294 Resistência ao fogo de vigas-coluna enformadas a frio**
F. Arrais, N. Lopes, P. Vila Real

PS1.7: Aula N01**SG08: Other numerical methods***Chair: I. Romero*

- 66 Solving a Linear Elastic Dynamic Problem Focusing on the High Frequency Algorithmic Damping**
E. Alberdi Celaya, J.J. Anza Aguirrezabala
- 265 ENATE scheme for bidimensional problems**
V.J. Llorente, A. Pascau, M. Arici
- 290 Accuracy of ENATE scheme for the two-dimensional Poisson equation**
V.J. Llorente, A. Pascau, M. Arici
- 422 Energy-entropy-momentum integration schemes**
D. Portillo, I. Romero
- 423 Technique to find 10-order Symmetric Composition Methods of Symmetric Integrators**
E. Alberdi Celaya, J. Makazaga, A. Murua
- 425 Computation of the C5G7 neutron transport benchmark using a spherical harmonics-nodal collocation method**
M.T. Capilla, C. Talavera, D. Ginestar, G. Verdú

PS1.8: Aula N08**SG08: Other numerical methods SG03: Contact mechanics***Chair: M. Tur*

- 323 Structural study of a new phase of tin oxide grown as a thin film**
J.M. Mariñoso Pascual, J.M. López García, S.A. Gómez Lopera
- 252 VOF-CSF methods for solving viscoelastic multiphase flows in microfluidics**
C.M. Oishi, R.A. Figueiredo, J.A. Cuminato, A.M. Afonso, F. Pimenta, M.A. Alves
- 173 Resistance to Jet Fires of Passive Protection Materials: Numerical Evaluation of Thermal Loads**
V. Dréan, R. Chiva, G. Auguin
- 389 Simulación de la interacción implante-mandíbula mediante el uso de mallados Cartesianos**
J.M. Navarro-Jiménez, M. Tur, J.J. Ródenas
- 151 Método de Contacto Numérico para Grandes Deformaciones basado en el Método Mortar y la Integración mediante el Método de la Colocación obtenido mediante la Diferenciación Automática**
V.M Vicente Mataix Ferrándiz, R.R Riccardo Rossi, M.K Mohamed Khalil, E.O Eugenio Oñate Ibañez de Navarra
- 480 Reconstrucción del campo de tensiones de contacto en mallados cartesianos 3D independientes de la geometría**
H. Navarro-García, J.M. Navarro-Jiménez, E. Nadal, M. Tur, J.J. Ródenas

Poster session 1: Tuesday, 4th July 10.30 - 11.30

Poster session 1: Tuesday, July 4th 10.30 - 11.30

ST: Poster

- 67** **RefficientLib: An Efficient Load-Rebalanced Adaptive Mesh Refinement Algorithm for High Performance Computational Physics Meshes**
J. Baiges, C. Bayona
- 86** **A Stability Analysis of Axially Loaded Thin-Walled Beams with Point-Symmetric Open Section using Corotational Finite Element Formulation**
C.C. Huang, S.C. Peng, K.M. Hsiao
- 140** **Efficient Large-Scale Evolutionary Topology Optimization for Architecture and Urban Design**
D. Lauriola, M. Kessler, D. Herrero-Pérez, J. Martínez-Frutos
- 158** **Hybridizable discontinuous Galerkin method for two phase flow problems**
A. Costa-Solé, E. Ruiz-Gironés, J. Sarrate
- 329** **Influence of soil stiffness and damping on dynamic response of offshore wind turbine**
M.R. Shah Mohammadi, P. Thomasson, C.A. Rebelo, L. Simões da Silva, M. Veljković
- 344** **Development of a thermo-mechanically coupled crystal plasticity finite element modeling framework**
J.F Li, J. Segurado, D. del Pozo
- 369** **Optimización de la geometría de catenarias ferroviarias de alta velocidad**
S. Gregori, E. Nadal, M. Tur, F.J. Fuenmayor
- 397** **Birth and growth of point defects in graphene**
F. Arca, M.P. Ariza
- 413** **The Material Point Method in KRATOS Multiphysics**
I. Iaconeta, A. Larese, R. Rossi, E. Oñate
- 439** **Modeling of seismic liquefaction using dynamic two-phase FEM with modified UBC3D-PLM model**
E.D. Wobbles, C. Vuik, L. Beuth, V. Galavi, D. Stolle
- 452** **Modelo unidimensional para vigas de pared fina**
F. Cabrera, A. Andrade, P. Providência, D. Camotim
- 472** **Computational design of structures and materials: From micro-scale to macro-scale**
A. Ferrer, J.C. Cante, J. Oliver
- 478** **Street lighting based on LED technology**
D. Alarcón, J. Higón, R. Bendaña, F. Giménez, P. Fernández de Córdoba
- 157** **Modelo de Calidad del Aire para la Contaminación por Ozono en la Ciudad de México**
A. Aguilar, F. León, M. Pineda, O. García, J. Axotla
- 90** **High-performance model order reduction in non-linear multiscale modeling of cementitious materials**
J Oliver, M Caicedo, A Huespe, J Mroginski

Parallel sessions 2: Tuesday, July 4th 11.30 - 13.00

Parallel sessions 2: Tuesday, July 4th 11.30 - 13.00

PS2.1: Salón de actos

ST12: Innovative methods for fluid-structure interaction problems

Chair: A. Franci

- 411 A displacement-based fluid-structure interaction model equipped with explicit streamline integration of nodal positions for alleviating time step restrictions**
P Ryzhakov, J Marti, S Idelsohn, E Oñate
- 112 Numerical and Analytical Solutions for Air Cavity Formation in Ducts**
J.A. Molina, P. Ortiz, A.E. Martínez
- 133 Optimal Solvers for Unfitted Finite Elements: Preliminary Steps towards FSI Applications**
F. Verdugo, S. Badia
- 260 FSI simulation problems with embedded fluid formulation. Application to mud motors simulation and Virtual Wind Tunnel facility.**
R. Zorrilla, R. Rossi, E. Oñate, A. Larese
- 266 Un método Chimera de alta precisión basado en Mínimos Cuadrados Móviles para mallas no estructuradas**
L. Ramirez, X. Nogueira, P. Ouro, F. Navarrina, I. Colominas, M. Casteleiro
- 295 Unified formulation for thermo-coupled FSI problems using the PFEM**
A. Franci, E. Oñate, J.M. carbonell

PS2.2: Salón de grados

ST03: Applications of the material point method in engineering

Chair: A. Larese, N. Pinyol

- 267 An implicit Material Point Method applied to granular flows using an irreducible and mixed formulation**
I. Iaconeta, A. Larese, R. Rossi, E. Oñate
- 278 An implicit meshless Material Point Method algorithm**
R. Rossi, A. Larese, I. Iaconeta, Z. Guo
- 356 Modelling of a tailings flow case history using MPM**
F Zabala, G Navarta, L Oldecop
- 404 Application of MPM to model internal erosion processes in bi-modal soils**
A. Yerro, A. Rohe, K. Soga
- 443 Análisis MPM de la rotura de un talud ensayado en centrífuga. Comparación de los resultados con medidas procesadas mediante PIV-NP**
M. Alvarado, M. Alvarado, N. Pinyol
- 444 Simulación en MPM de la aceleración de deslizamientos por efectos térmicos**
M. Alvarado, N. Pinyol, E. Alonso

PS2.3: Air Nostrum**ST16: Métodos computacionales en acústica y vibraciones***Chair: J. Ramis, J. Carbajo, L. Godinho, F.D. Denia*

- 362 Estudio numérico del comportamiento acústico del conjunto móvil de un altavoz de tipo Air Motion Transformer**
J. Ramis-Soriano, E.G. Segovia Eulogio, L. Cortesao Godinho, P. Amado Mendes, J. Carbajo San Martín
- 424 Solution of low Mach number aeracoustic flows using a Variational Multi-Scale formulation of the compressible Navier-Stokes equations written in primitive variables**
C. Bayona, J. Baiges, R. Codina
- 487 Computational homogenization procedure for acoustic problems**
D. Roca, O. Lloberas-Valls, J. Cante, X. Oliver
- 318 Cálculo 3D de la potencia acústica radiada por una rueda ferroviaria a partir de la respuesta temporal con efectos giroscópicos y comportamiento no lineal**
X. Garcia-Andrés, F.D Denia, J. Martínez-Casas, L. Baeza
- 321 Estudio del crecimiento de la corrugación en carriles en vía curva utilizando un modelo de eje montado flexible rotatorio**
P. Vila, J. Giner-Navarro, J. Martínez-Casas, L. Baeza
- 184 Comparing Approaches between Numerical Simulations and Emulations by Electronic Circuits in a Fractional Dynamic Model**
S.A. David, C. Fischer, C. de Oliveira

PS2.4: Aula S01**ST28: Physics and mechanics at nanoscale***Chair: M.P. Ariza, N. Silvestre*

- 98 Atomistic Finite Element Modelling of the Nonlinear Mechanical Behaviour of Gamma-Graphyne**
F.C. Rodrigues, N. Silvestre
- 183 Molecular Dynamics Study of Self-Diffusion in Stoichiometric B2-NiAl**
M. Maździarz, J. Rojek, S. Nosewicz
- 302 Modelling plasticity at the micron scale**
E. Martínez-Pañeda
- 396 Deformation-Diffusion Coupled Analysis of Long-Term Hydrogen Diffusion in Nanofilms**
X Sun, K.G. Wang, M.P. Ariza
- 397 Birth and growth of point defects in graphene**
F. Arca, M.P. Ariza
- 410 Finite Element Modeling of Crack Sensing in Polymers Using Conductive Carbon Nanotube Networks**
K. Tserpes, Ch. Kora

PS2.5: Aula N06**ST04: Biomecánica***Chair: F. Gabaldón*

- 309** Establishing the biomechanical properties of the pubovisceralis muscle in women without pathology and with pelvic organ prolapse
M.E. Silva, S. Brandão, M.P. Parente, T. Mascarenhas, R.M. Natal Jorge
- 316** Modelo bioquímico a partir de un sistema reacción-difusión para determinar la arquitectura del hueso trabecular primario
O. R López, D. A Garzón
- 387** Vulnerability in Regionally Ischemic Human Heart. Effect of the Extracellular Potassium Concentration
A Mena, J.F. Rodriguez
- 442** A mathematical model for growth, regression, and regrowth in tumor-induced angiogenesis
G Vilanova, I Colominas, H Gomez
- 491** Comparación de los umbrales de fractura biomecánica de los tejidos de la cabeza humana mediante un modelo de elementos finitos
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- 301** Numerical model for the thermal analysis of composite steel- concrete shallow floor beams
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- 354** Lateral-torsional buckling of steel beams with slender cross-section and non-uniform bending moments in case of fire
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- 476** Análisis de estructuras pretensadas mediante la teoría constitutiva de mezclas Serie-Paralelo
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- 437** Análise não linear de treliças planas de aço em situação de incêndio
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- 346** **Optimization of fiber reinforced composites by roving based modelling**
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- 471** **Computational design of structures and materials: From micro-scale to macro-scale**
A. Ferrer, J.C. Cante, J. Oliver
- 474** **Optimization of hybrid fiber composite materials, considering stiffness and pseudo-plasticity as criteria**
F.J. Leal, J.M. Guedes, H. Rodrigues
- 113** **Robust Topology Optimization of Continuum Structures using Isolines and Fixed Grid under Loading Uncertainty**
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- 193** **A Downscale Wind Forecasting Method based on WRF-HDMW Coupling**
M. I Asensio, J.M. Cascón, L. Ferragut, E. Hernández
- 282** **Estimación de parámetros en un modelo de viento mediante un algoritmo memético**
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- 380** **Simulación de la calidad del aire en la escala urbana mediante elementos finitos**
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- 429** **Aplicación del análisis isogeométrico a un problema de ajuste de viento**
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Chair: I. Montalvo

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- 200 Mejora de la eficiencia en la integración explícita de modelos constitutivos**
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- 212** **Otimização de laminados com rigidez variável sujeitos a vibrações livres, usando evolução diferencial.**
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- 249** **Comparação entre o desempenho de dois Solvers de Otimização na Resolução de Problemas de Transporte com Custo Fixo**
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- 299** **Método Grid-Quadtree para a seleção de parâmetros do algoritmo Support Vector Classification (SVC)**
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- 106** **Optimización Robusta de Diseños Aeronáuticos utilizando Análisis Estocástico con Métodos de Montecarlo Multinivel y Algoritmos Evolutivos**
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Parallel sessions 4: Tuesday, July 4th 16.30 -18.00

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- 100 Prioritization of Maintenance Actions in Water Distribution Systems**
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Chair: J. Belinha

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- 104 Numerical Initiation of Motion of Non-Spherical Sediment Particles on Inclined Bedforms**
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- 181 Particle-Enhanced, Finite Element Simulations of Multiphase Flows**
J.L. Prieto
- 333 Discrete element model of additive manufacturing with cement-based materials**
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- 277** A 3D coupled hydromechanical model for dam foundation analysis in small displacements
M.L. Farinha, N.M. Azevedo, J.R. Almeida, M. Candeias
- 300** Development of complex numerical models for geotechnical engineering problems
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- 418** Rigid body spring model for the structural assessment of old masonry dams
F. Peña, L. Robles
- 439** Modeling of seismic liquefaction using dynamic two-phase FEM with modified UBC3D-PLM model
E.D. Wobbes, C. Vuik, L. Beuth, V. Galavi, D. Stolle
- 481** Estimation of petrophysical properties at seismic scale using artificial neural networks to build realistic geological models to be used when inverting seismic velocities
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- 94** Evaluación Estructural del Palacio d'Eixarchs de Valencia (España) empleando Modelos de Elementos Finitos
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- 247** Typological Study of Unreinforced Masonry Structures by means of Macro-element Nonlinear Dynamic Analyses
C. Chácará, P.B. Lourenço, F. Cannizzaro, B. Pantò, I. Calìò
- 258** An adaptive domain decomposition approach for modeling failure in unreinforced masonry using the finite element method
C. Driesen, B. Vandoren
- 386** The effect of morphology on the structural behaviour of masonry walls
L. Alejo, N. Mendes, P. Lourenço

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- 69 Quick 3D Trajectory Planning for Rotating Extensible Manipulators using Piecewise Polynomial Interpolation**
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- 253 Diseño multi-objetivo de un mecanismo para la locomoción bípeda**
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- 342 Numerical Aspects in Multibody Dynamics with Frictional Contacts**
F. Marques, P. Flores
- 341 A Critical Overview of Several Methods to Handle the Problem of Constraints Violation in Forward Multibody Dynamics**
F. Marques, A.P. Souto, P. Flores

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- 335 A lattice-based multi-scale framework for modelling concrete fracture under dynamic loading**
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- 414 Prediction of effective properties for simulation and optimisation of metal foams**
J. Aquino, I. Duarte, J. Dias-de-Oliveira
- 417 Loading path design and material parameter identification in elastoplasticity using SVD techniques**
A. Andrade-Campos, J.P. Martins, E. Ferreira
- 119 Micromechanical Model for the Simulation of Creep Deformation in Inconel 718**
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- 138 Modelo Constitutivo Macromecánico para Hormigones a Temperaturas Elevadas**
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Chair: D. Greiner

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- 369** **Optimización de la geometría de catenarias ferroviarias de alta velocidad**
S. Gregori, E. Nadal, M. Tur, F.J. Fuenmayor
- 70** **Cost Sensitivity Analysis in Bridges Design**
J.V. Martí, F. González-Vidoso, V. Yepes
- 412** **Optimização de pontes extradorsais em betão**
A.M. Martins, L.M. Simões, J.H. Negrão
- 467** **Development of an optimization algorithm for estimating the state of loads of a structural component based on its optimal shape**
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Poster session 2: Wednesday, July 5th 10.30 - 11.30

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- 126** New Quality Measures for Quadrilaterals and New Discrete Functionals for Grid Generation
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- 225** Isogeometric simulations of glioma growth on precise brain geometries based on the proliferation-invasion-hypoxia-necrosis-angiogenesis model
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- 284** Design of a flexible nuclear reactor simulator based on finite elements and parallel computing
G.A. Giuntoli
- 330** Three-dimensional simulation of preload filling spiral case considering the shrinkage after pouring concrete
Yang Yang, Chao Su, Hui Xu, S.P. Hu
- 355** Modelado de la respuesta de un pavimento flexible reforzado con geoceladas, apoyado sobre una subrasante discontinua fisurada por desecación
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- 389** Simulación de la interacción implante-mandíbula mediante el uso de mallados Cartesianos
J.M. Navarro-Jiménez, M. Tur, J.J. Ródenas
- 398** Point defects in graphene
F. Arca, M.P. Ariza
- 403** Seismic response control in buildings via passive energy dissipative devices
G. Cano, C. Davalos, V. Hernandez, A.L. Lopez Leon
- 480** Reconstrucción del campo de tensiones de contacto en mallados cartesianos 3D independientes de la geometría
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- 487** Computational homogenization procedure for acoustic problems
D. Roca, O. Lloberas-Valls, J. Cante, X. Oliver
- 376** Aplicación de la Descomposición Propia Generalizada a la Reaction Diffusion Master Equation (RDME)
L. Andrés, O. Pellicer, J.R. Sánchez, R. da Silva
- 428** Desarrollo de un método analítico para el diseño de revestidores en el proceso de construcción de pozos petroleros
M Martínez, S Suárez, M González
- 338** Reduced-order multiscale simulations
J.A. Hernandez, M.A. Caicedo, J. Oliver

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Chair: I. Colominas

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- 57 Aplicación de las Derivadas Fraccionarias a la Simulación Hidrológica**
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- 84 Aproximación Numérica de Problemas Térmicamente Acoplados utilizando una Formulación Estabilizada FEM del tipo VMS en Flujos Turbulentos de Fluidos de Ley de Potencia**
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- 95 Un Método Híbrido de Diferencias Finitas de muy Alta Resolución Espectral para Flujos Compresibles con Presencia de Ondas de Choque Fuertes**
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- 111 Continuous Finite Element approach to Free Surface Frictional Flows**
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Chair: J.J. Ródenas

ST11: Image processing and visualization

Chair: J.M.R.S. Tavares, X. Roca

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- 237 Frictional contact in Friction Stir Welding**
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- 281 Estudio del comportamiento mecánico de tuberías de material compuesto para el transporte de hidrocarburos por elementos finitos**
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- 144 Algoritmos Paralelos para la Corrección de Ruido Mixto Gaussiano-Impulsivo en Imágenes Digitales**
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- 239 Segmentation of Skin Lesion Images based on an Active Contour Model**
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- 292 Sistema Biométrico de Identificação de Usuários baseado em Reconhecimento do Sistema Vasculare do Dorso da Mão**
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