

# cmn 2015

**Congress on Numerical Methods  
in Engineering**

# PROGRAMME

**June 29 to July 2, 2015**

Instituto Superior Técnico • Universidade de Lisboa  
LISBOA • PORTUGAL



## Welcome Message

On behalf of CMN2015 organizing committee we are pleased to welcome you to Lisbon for the Congress on Numerical Methods in Engineering (CMN 2015) held at Instituto Superior Técnico of the Universidade de Lisboa.

CMN 2015 is jointly organized by the Portuguese (APMTAC) and Spanish (SEMNI) associations for numerical methods, and follows the previous congress editions of Madrid (2002), Lisbon (2004), Granada (2005), Porto (2007), Barcelona (2009), Coimbra (2011) and Bilbao (2013).

We invite you to be an active participant in this Congress and to contribute to any topic, thematic or general session, of your scientific interest. By promoting a relaxed atmosphere for discussion and exchange of ideas we expect that new paths for research are stimulated and promoted and that new collaborations can be fostered. We hope that the Congress on Numerical Methods in Engineering (CMN 2015) will have an important impact on the research in all topics included in its programme.

We want to express our appreciation to all members of the committees involved in the preparation of this Congress, to all thematic sessions organizers who identified and promoted some of the most active topics of research in Numerical and Computational Methods, to all the staff who are managing the different aspects of the Congress and to all the contributing authors and participants who will create the real Congress.

We hope that all of you feel rewarded for your participation and contribution.

*Lisbon, June 2015*

*José Miranda Guedes*

*Jesús María Blanco*

*Nuno Silvestre*

*Irene Arias*

*Miguel Tavares da Silva*

*Manuel Tur Valiente*

**APMTAC**

**SEMNI**





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# Congress Organization

## Organizing Committee

### APMTAC:

*José M. Guedes*, IST, UL, Portugal

*Nuno Silvestre*, IST, UL, Portugal

*Miguel Silva*, IST, UL, Portugal

### SEMNI:

*Jesús María Blanco*, UPV/EHU, Bilbao, España

*Irene Arias*, UPC, Barcelona, España

*Manuel Tur Valiente*, UPV, València, España

## Scientific Committee

### APMTAC:

*Jorge Ambrósio*, (IST/UL)

*Eduardo Arantes e Oliveira*, (IST/UL)

*Joaquim I. Barbosa*, (UE & ISEL)

*Dinar Camotim*, (IST/UL)

*José Carlos Pereira*, (IST/UL)

*José César de Sá*, (FEUP)

*António Ferreira*, (FEUP)

*Isabel Figueiredo*, (UC)

*Luís Filipe Menezes*, (UC)

*Joana Fortes*, (LNEC)

*Paulo Lourenço*, (UM)

*Carlos A. Mota Soares*, (IST/UL)

*Paulo Oliveira*, (UBI)

*Paulo Piloto*, (IPB)

*Fernando Pinho*, (FEUP)

*Carlos Pina*, (LNEC)

*João Rocha Almeida*, (UNL)

*Helder Rodrigues*, (IST/UL)

*Adélia Sequeira*, (IST/UL)

*António Tadeu*, (UC)

*Filipe Teixeira Dias*, (UA)

*Paulo Vila Real*, (UA)

### SEMNI:

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*Pilar Ariza Moreno*, (US)

*Jesús María Blanco*, (EHU)

*Manuel Casteleiro Maldonado*, (UDC)

*Miguel Cervera Ruiz*, (UPC)

*Ignasi Colominas Ezponda*, (UDC)

*Elías Cueto Prendes*, (UNIZAR)

*José María Goicolea Ruigómez*, (UPM)

*Antonio Huerta Cerezuela*, (UPC)

*Fermín Navarrina Martínez*, (UDC)

*Xavier Oliver Olivella*, (UPC)

*Eugenio Oñate Ibáñez de Navarra*, (UPC)

*José Luis Pérez Aparicio*, (UPV)

*Antonio Rodríguez Ferran*, (UPC)

*Riccardo Rossi*, (UPC)

## Organizing Institutions



Associação Portuguesa de Mecânica  
Teórica, Aplicada e Computacional



Sociedad Española de Métodos  
Numéricos en Ingeniería

# Congress Information

## Endorsed by

- IDMEC Instituto de Engenharia Mecânica
- Técnico Lisboa – Instituto Superior Técnico
- Câmara Municipal de Lisboa
- Museu de Lisboa

## Congress Venue

The Congress on Numerical Methods in Engineering (CMN 2015) takes place in Instituto Superior Técnico (IST) Congress Center, situated at the Civil Engineering Building (Pavilhão de Civil) with the address:

**Congress Center**  
*(Civil Engineering Building)*  
 Instituto Superior Técnico  
 Av. Rovisco Pais 1  
 1049-001 Lisboa

## Coffee-Breaks

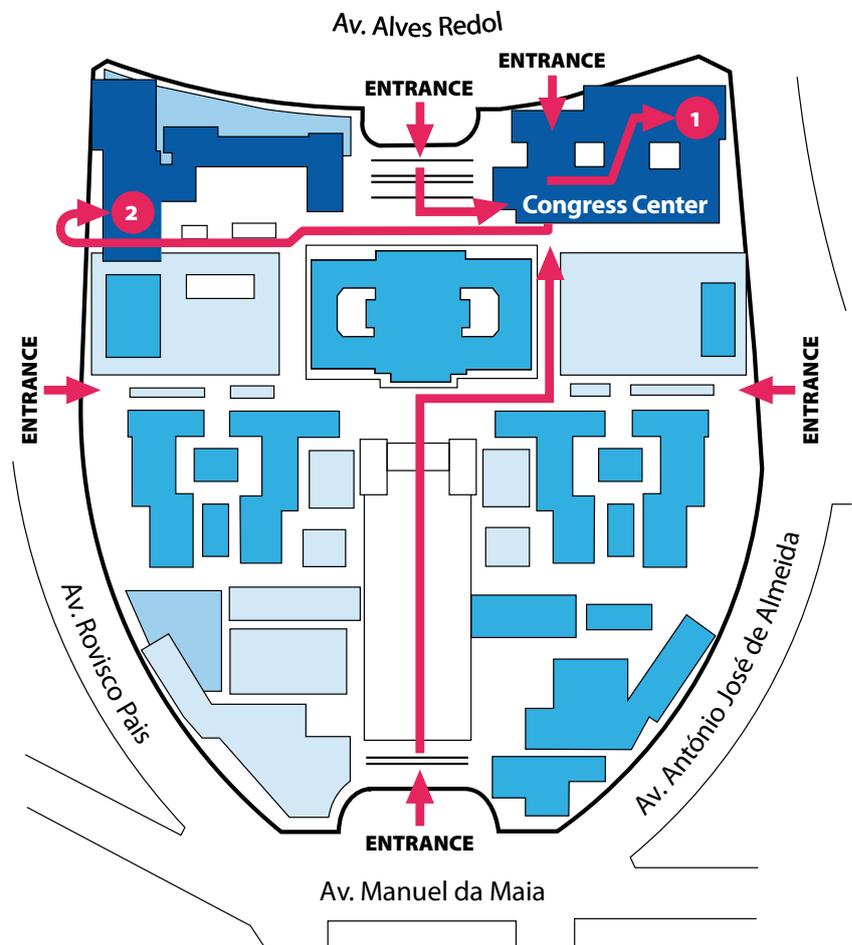
The coffee-breaks will take place in the hall -2 (2<sup>nd</sup> Basement) of the conference center (see map of the conference center) and will be open to all participants. Kindly wear your Conference Badge.

## Lunches

The Lunch tickets included in the package received during the registration will be honored at the two restaurants and a bar marked in the map below. Both restaurants offer a few choices for lunch in self-service. The bar allows the participants to choose their own lunch at will, 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.

## Secretariat Open Hours

- Sunday, June 28, 15:00-18:00
- Monday, June 29, 08:00-17:00
- Tuesday, June 30, 08:30-17:00
- Wednesday, July 01, 08:30-17:00
- Thursday July 02, 09:30-13:00



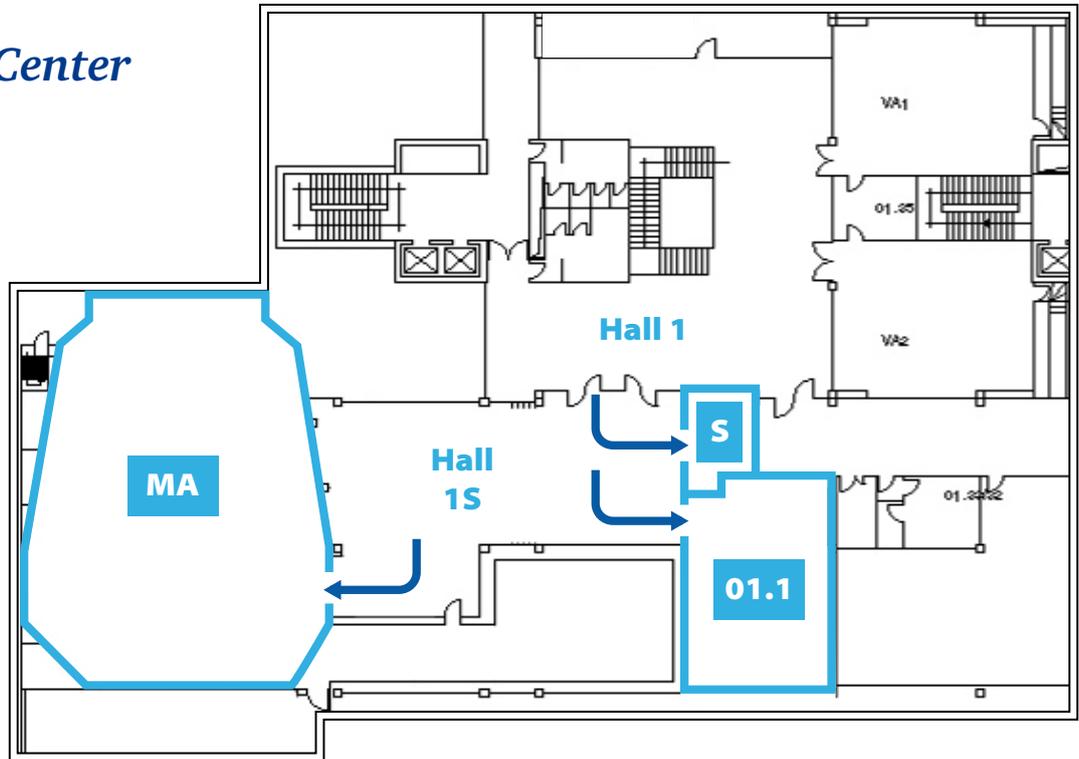
**1- Restaurant 1**  
 Congress Center Building  
 Floor 0 (Ground Floor)

**2- Restaurant 2**  
 Post Graduation Building  
 Floor -1 (1<sup>st</sup> Basement)

# Congress Information

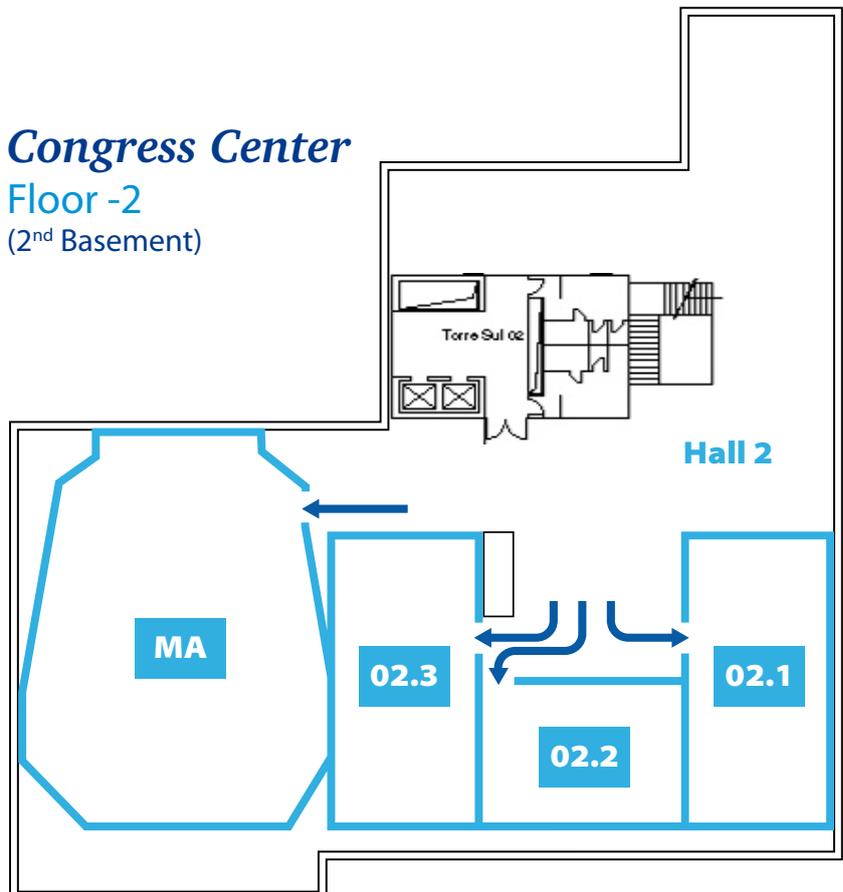
## Congress Center Floor Plans

### Congress Center Floor -1 (1<sup>st</sup> Basement)



- MA - Main Auditorium
- S - Secretariat
- 01.1 - Session Room
- 02.1 - Session Room
- 02.2 - Session Room
- 02.3 - Session Room

### Congress Center Floor -2 (2<sup>nd</sup> Basement)

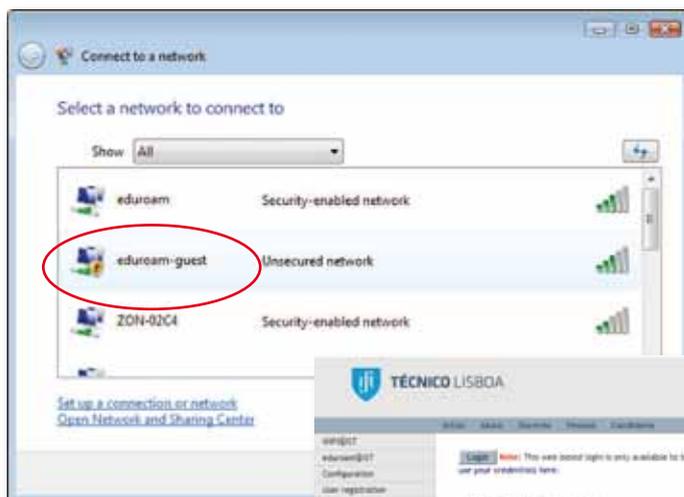


# Congress Information

## Wireless Internet Access

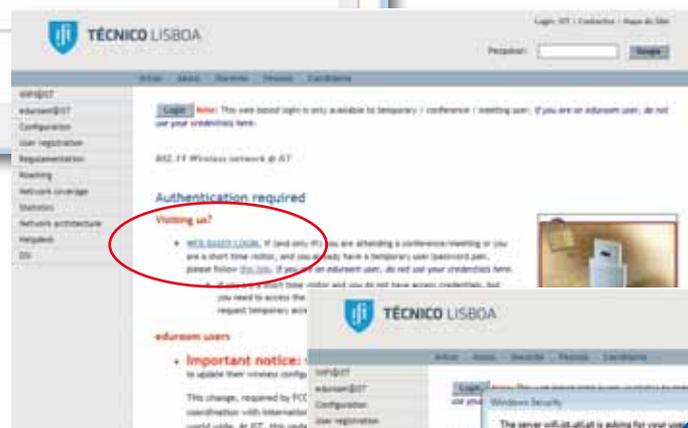
### Step 1:

Select the eduroam-guest network

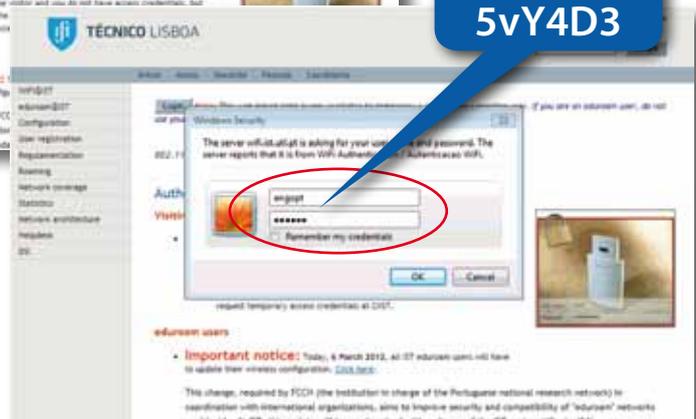


### Step 2:

Open your web access program (Microsoft Explorer or other) and select WEB BASED LOGIN.



**CMN2015  
5vY4D3**



### Step 3:

Enter user: **CMN2015**  
Password: **5vY4D3**

## Instructions for Presenters

- Each Oral presentation will take 15 minutes including discussion (12 for presentation + 3 for discussion).
- 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 respective session. Conference computers run Windows 7 and have installed Office 2010 and Acrobat PDF reader.

# Social Programme

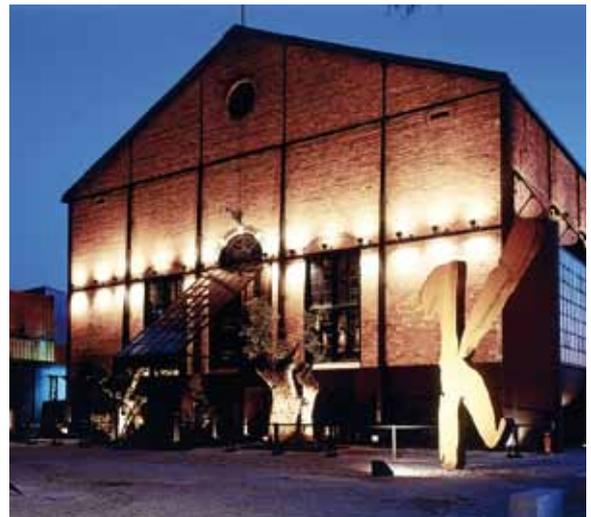
## Welcome Reception – Monday, June 29<sup>th</sup>, 18h-20h

The Welcome Reception, hosted by the City Council, will be held at the Lisbon City Museum. The best way to reach the Museum is to take the **subway (yellow or green line)** to ‘**Campo Grande**’. In this museum, the history of Lisbon since ancient times until the 19th century is described. It is housed in an 18th century palace (Palácio Pimenta) built during the reign of king D. João V of Portugal. The museum has paintings, watercolours, tile panels, historical documents and even a model of the city of Lisbon before the destruction caused by the 1755 earthquake.



## Congress Banquet – Wednesday, July 1<sup>st</sup>, 20h

The congress banquet will take place at the restaurant KAIS located at Cais da Viscondessa R. da Cintura – Santos. To get there, you can take the **subway (green line)** and pick the station **Cais do Sodré** and a then 10 minutes walking along the Tagus River. **Please do not forget to bring your Banquet Vouchers.**





## General Tourist Information

### Getting to Lisbon by air

Direct flights from most of European cities, North or South America and Africa land at the Portela Airport, terminal 1. A taxi ride from the airport to IST is about 4-5 km that takes 10-15 min, depending on traffic, and should cost around 8€. To downtown the taxi ride is about 7 km and should cost around 10€. 1.60€ is charged for the transportation of luggage or animals. A sure option is the “Taxi Voucher” a prepaid taxi service starting at 16.40€, on sale at the “Information Desk” in the arrival terminal. Lisbon Airport has its own Metro Station, Aeroporto - red line (see map of Lisbon with subway lines). Other options are the AeroBus and the Aeroshuttle (3.5€).

### Getting to Lisbon by car

Drivers coming from the north use highway A1 while those coming from East and South use highway A2, entering in Lisbon through the 25 de Abril bridge or use A12 and enter by the Northeast of Lisbon through the Vasco da Gama bridge. The speed limits in Portugal are 120 km/h on highways, 90 km/h on roads and 50 km/h in urban areas, unless marked otherwise.

### Getting to Lisbon by train

The St. Apolónia station is the terminal for trains arriving from the North of Portugal. Another option is to use the train station Oriente. From the South of Portugal an option is to use the train station Oriente. Connections to the metro lines exist at both stations (St. Apolónia - blue line, Oriente - red line).

### Moving around

#### Taxi:

Lisbon is served by an extensive network of public transportation that can take you anywhere in the city and to its surroundings. Taxis (black and green or beige) are cheap when comparing to most of the European countries. They can be called by phone, picked-up on taxi plazas or stopped on the street.

The fare on the taxi meter should start at 3.25€ (daytime pick-up) or 3.90€ (nighttime). Outside the city limits, city fares are charged per kilometer. 1.60€ is charged for the transportation of luggage or animals. Before taking a taxi, inquire about the fare.

#### Metro:

The Lisbon Metro is a very comfortable and easy way to reach most of the city, from 6:30 to 1:00. The Metro lines reach most of the city being the Metro stations close to IST:

- Alameda (red and green line)
- Saldanha (red and yellow line)

#### Bus

The bus routes cover all Lisbon and extend to its outskirts. The tickets can be pre-paid, at the counters of Carris, the surface transportation operator for Lisbon, or bought aboard the bus, electric cars or funiculars. For IST hop off on one of the following bus stops:  
Av. Manuel Maia  
Av. Rovisco Pais  
Arco do cego

#### Metro and Bus Fares:

Reusable card – 0.50 €  
METRO/CARRIS – 1.40 €  
CARRIS  
Bus – 1.80€ (on board fare)  
Tram – 2.85 (on board fare)

#### Trains

Suburban trains to Estoril and Cascais depart from the Cais do Sodré train station, to the south of the river cities from Roma-Areeiro (Entrecampos) while to Sintra the trains depart from Rossio train station or Oriente (Entrecampos). The ride to Cascais or to Sintra should take about 35-45 min, each way. The train ride to south of the river is a highlight as the train will cross the 25 de Abril bridge with magnificent views of Lisbon.

For IST the nearby train stations are:

Roma-Areeiro  
Entrecampos

## National emergency number: 112

### Other general information

- Time zone: GMT +1 summer time
- Electricity: 220V, 50 Hz  
with standard European power sockets
- Currency: Euro (€)
- Banks: working hours are  
8:30 – 15:00 (*Monday-Friday*)
- Pharmacies: 9:00 – 19:00
- Shops: 9:00 – 19:00
- Shopping Malls: 10:00 – 23:00
- Temperature: Average high 28°C,  
Average low 18°C



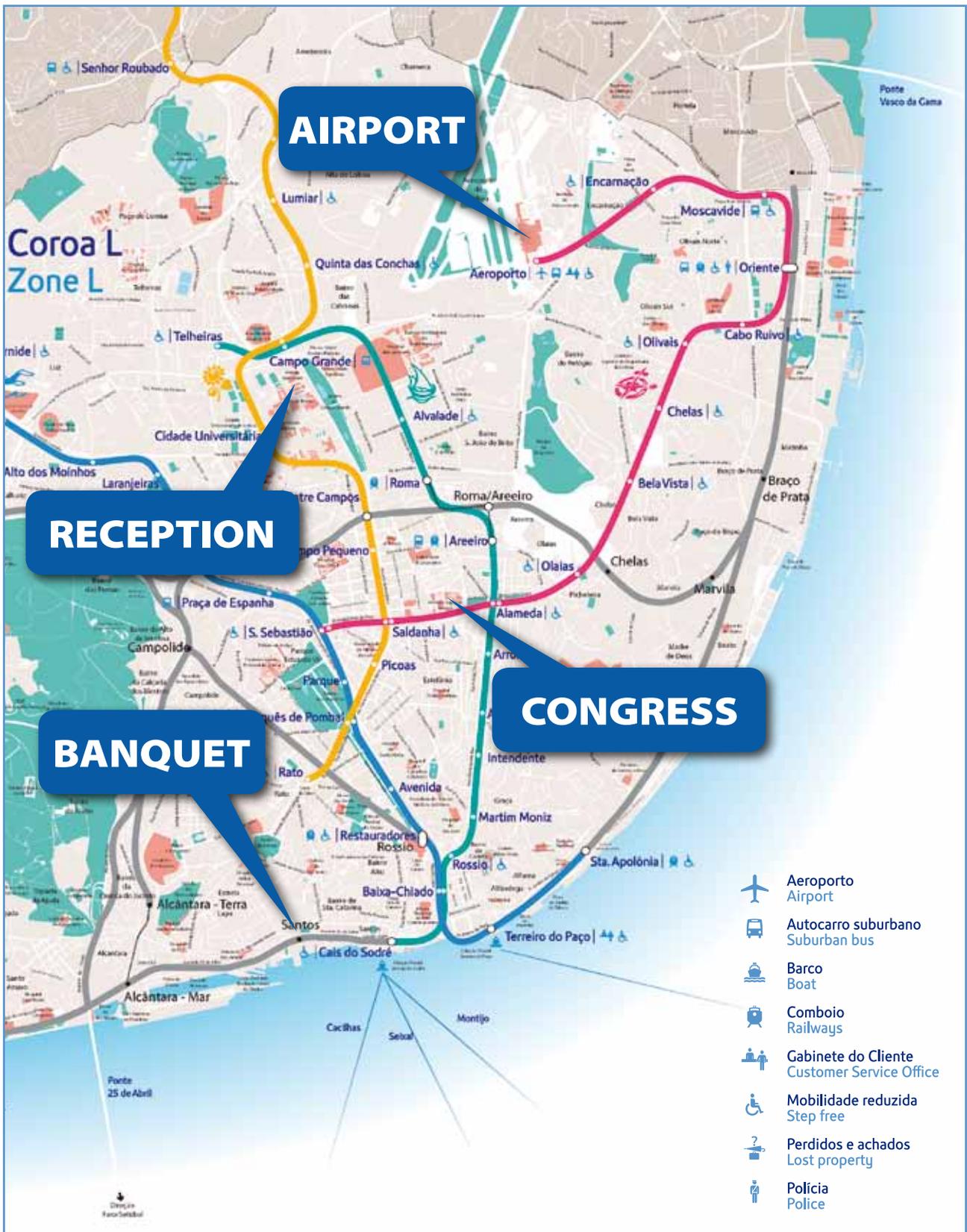
### Main Museums in Lisbon:

- Centro de Arte Moderna  
(*Modern Art Museum*)
- Museu do Oriente  
(*Oriente Museum*)
- Museu Calouste Gulbenkian  
(*Calouste Gulbenkian Museum*)
- Museu dos Coches  
(*Coach Museum*)
- Museu Nacional de Arte Antiga  
(*National Museum for Old Art*)
- Colecção Berardo  
(*The Berardo Collection*)
- Museu do Azulejo  
(*Tile Museum*)

### Main Monuments in Lisbon:

- Aqueduto das Águas Livres  
(*Free Waters' Aqueduct*)
- Basílica da Estrela  
(*Estrela Basilica*)
- Castelo de São Jorge  
(*Saint George's Castle*)
- Sé Patriarcal  
(*Patriarchal Cathedral*)
- Mosteiro dos Jerónimos  
(*Jerónimos Monastery*)
- Padrão dos Descobrimentos  
(*Monument to the Discoveries*)
- Torre de Belém  
(*Belém Tower*)

# Map of Lisbon



# Programme at a Glance

## CMN2015 – GENERAL PROGRAMME

	June 28 Sunday	June 29 Monday	June 30 Tuesday	July 1 Wednesday	July 2 Thursday
08:00-09:00		Registration			
09:00-09:45		Opening Session	Keynote Lecture II	Keynote Lecture IV	
09:45-10:30		Keynote Lecture I	Keynote Lecture III	Keynote Lecture V	Keynote Lecture VI
10:30-11:00		Break	Break	Break	Break
11:00-12:30		ST12 GA 01.1 ST02 01.1 ST04 02.1 ST20 02.2 ST10 02.3	ST17 GA 01.1 ST01 01.1 ST11 02.1 ST18 02.2 ST26 02.3	ST17/19 GA 01.1 ST05 01.1 ST22 02.1 ST03 02.2 ST27 02.3	ST09 GA 01.1 GS02 02.3 GS01 02.3 GS04 02.2 GS05 02.3
12:30-14:00		Lunch	Lunch (SEMINI meeting – V1.05) APMTAC meeting – V1.04)	Lunch	Closing Session
14:00-15:30		ST12 GA 01.1 ST02 01.1 ST04 02.1 ST20 02.2 ST10 02.3	ST17 GA 01.1 ST01 01.1 ST11 02.1 ST18 02.2 ST26 02.3	ST25 GA 01.1 ST05 01.1 ST22 02.1 ST03 02.2 GS03 02.3	
15:30-16:00		Break	Break	Break	
16:00-17:30	Pre-Registration	ST12 GA 01.1 ST08 01.1 ST25 02.1 ST20/16 02.2 ST06 02.3	ST17 GA 01.1 ST27 01.1 ST11 02.1 ST21 02.2 ST07 02.3	ST04 GA 01.1 ST13 01.1 ST24 02.2 GS03 02.3	
17:30-18:00					
18:00-19:00		Welcome Reception (Museu da Cidade)	SEMINI Assembly – 02.1 APMTAC Assembly – 02.2		
19:00-20:00					
20:00-20:30				Conference Dinner (Kais Restaurant)	
20:30-22:30					

# Sessions

Topic	June 29 Monday		June 30 Tuesday		July 1 Wednesday		July 2 Thursday			
	09:00-10:30	11:00-12:30	14:00-15:30	16:00-17:30	09:00-10:30	11:00-12:30	14:00-15:30	16:00-17:30	09:00-10:30	11:00-12:30
SP - Plenary sessions	Gran. Aud.				Gran. Aud.				Gran. Aud.	
ST01 - Processamento de Imagem e Visualização					Sala 01.1					
ST02 - Técnicas de Redução de Modelos		Sala 01.1								
ST03 - Métodos Computacionais em Acústica e Vibrações						Sala 02.2				
ST04 - Biomecânica Computacional e Aplicações		Sala 02.1								
ST05 - Métodos sem Malha						Sala 01.1				
ST06 - Evolutionary Algorithms And Metaheuristics In Civil Engineering And Construction Management				Sala 02.3						
ST07 - Computational Modeling in Mechanobiology and Tissue Engineering										
ST08 - Inverse Problems				Sala 01.1						Gran. Aud.
ST09 - Isogeometric Analysis (IGA)										
ST10 - Recent Progresses in Derivative-Free Methods for Engineering Optimization		Sala 02.3								
ST11 - Coupled Problems and Parallel Computing in Engineering		Gran. Aud.				Sala 02.1				
ST12 - Heat and Mass Transfer										
ST13 - Numerical methods for building energy simulation										Sala 01.1
ST16 - Computational Fracture Mechanics for Polymer Composites										
ST17 - Computational Fluid Dynamics										
ST18 - Estabilidade, Comportamento Não Linear e Dimensionamento de Estruturas Metálicas						Sala 02.1				
ST19 - Higher-Order Finite Volume Methods										
ST20 - Fratura, Colapso e Comportamento Não-Linear em Estruturas de Betão e de Materiais Quási-Frágéis		Sala 02.2								
ST21 - Steel and Composite Structures										
ST22 - Geotechnics and Geoen지니어ing										
ST24 - Dynamic Effects in High-Speed Railway Tracks										
ST25 - Physics and Mechanics at Nanoscale										
ST26 - Topology Optimization										
ST27 - Caracterização da Enformabilidade, Dano E Fractura Dúctil em Processos de Conformação Plástica										
GS01 - Mathematical Problems in Engineering										
GS02 - Optimização										
GS03 - Métodos Computacionais em Previsão/Estimação										Sala 02.1
GS04 - Algoritmos Genéticos e Redes Neuronais										Sala 01.1
GS05 - Métodos Computacionais em Proc. Industriais										



# Sessions

Monday, June 29<sup>th</sup> | 09:45 - 12:30

09:45-10:30	Grande Auditório	Keynote Lecture	Multibody dynamics approaches to the treatment of large rotations and large deformations	Jorge Ambrósio
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10:30-11:00	<b>BREAK</b>			
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Grande Auditório	ST12	Heat and Mass Transfer	Chairs: Jesús María Blanco, Nuno Simões	
	Nº	Paper	Authors	Presenter
11:00-11:15	021	Numerical simulation of liquid semi-crystalline planar film casting processes	Juan Ramos	Juan Ramos
11:15-11:30	041	Control de la Isla de Calor Urbano (ICU) mediante simulación numérica	Miguel Ernesto Vazquez-Mendez, Lino J. Alvarez-Vazquez, Francisco J. Fernandez, Nestor Garcia-Chan and Aurea Martinez	Miguel Ernesto Vazquez-Mendez
11:30-11:45	057	Mathematical model of mixing dopamine with human blood on an actual domain	Ciro-Filemon Flores-Rivera, Armando Flores-Moreno, Saul Dominguez-Casasola and Eden Mayor-Garcia	Ciro-Filemón Flores-Rivera
11:45-12:00	218	Estudo numérico de transferência de massa em fatias de caju considerando seu encolhimento	Jacek Stanislaw Michalewicz, Jorge Recarte Henriquez, Flávio Augusto Bueno Figueiredo, Renata Andrade Figueiredo and Jose C. Charamba Dutra	Jacek Stanislaw Michalewicz
12:00-12:15	219	Simulação numérica do processo de gaseificação aplicada a fontes de biomassa da região nordeste do Brasil.	Jorge R. Henriquez, Jarmison De Araújo Silva, Renata A. Figueiredo, Flávio A. B. Figueiredo, Jacek Michalewicz and Rômulo Menezes	Jorge R. Henriquez

Sala 01.1	ST02	Técnicas de Reducción de Modelos	Chairs: Elías Cueto, Pedro Díez, Antonio Huerta	
	Nº	Paper	Authors	Presenter
11:00-11:15	419	The PGD-Latin method for the load flow problem in electric grids	Raquel García-Blanco and Pedro Diez	Pedro Diez
11:15-11:30	101	Efficient dimensional reduction of nonlinear finite element models	Joaquín A. Hernández and Javier Oliver	Joaquín A. Hernández
11:30-11:45	072	New effective basis system for the POD-snapshots based reduction models	Iñigo Bidaguren, Lakhdar Remaki and Jesús M. Blanco	Iñigo Bidaguren
11:45-12:00	024	Combinação de análise de componentes principais com técnicas não paramétricas para estabelecer valores limite em gráficos de controle aplicados em dados de instrumentação de barragem	Emerson Lazzarotto, Anselmo Chaves Neto, Liliana M. Gramani, Luiz A.T. Júnior and Edgar M.C.Franco	Emerson Lazzarotto
12:00-12:15	051	Reduced Order Subscales for POD models	Joan Baiges and Ramon Codina	Joan Baiges
12:15-12:30	420	Advanced techniques for coupling domains for generalized solutions computed by the Proper Generalized Decomposition	Enrique Nadal, Francisco Chinesta and Antonio Huerta	Antonio Huerta

Sala 02.1	ST04	Biomecânica Computacional e Aplicações	Chairs: João Folgado, Renato Natal Jorge, Begoña Calvo, Estefanía Peña	
	Nº	Paper	Authors	Presenter
11:00-11:15	067	Redistribución de tensiones en el primer metatarso tras extracción de material óseo para trasplante autólogo de hueso	Javier Bayod, Ricardo Becerro de Bengoa Vallejo and Marta Elena Losa Iglesias	Javier Bayod
11:15-11:30	102	Biomechanical study of the vertiginous syndrome using the finite element method to improve vestibular rehabilitation	Carla Santos, Fernanda Gentil, Marco Parente, Jorge Belinha and Renato Natal Jorge	Carla Santos
11:30-11:45	118	Modelos 3D hueso-implante combinando TAC y CAD en mallas Cartesianas de elementos finitos h-adaptadas.	Luca Giovannelli, Onofre Marco, Francisco Javier Fuenmayor, Juan José Ródenas and Manuel Tur	Juan José Ródenas
11:45-12:00	125	Computer simulation of the electric activity of the heart using graphic processing units	Andrés Mena Tobar, Luis Mena Tobar and Jose F. Rodriguez Matas	Andrés Mena Tobar
12:00-12:15	169	Determination of bone remodeling process in insertion procedures of dental implants and minimplants by finite element method	José Alejandro Guerrero Vargas, Martín Casale, Estevam Barbosa and Diego Alexander Garzón Alvarado	José Alejandro Guerrero Vargas

Sala 02.2	ST20	Fratura, Colapso e Comportamento Não-Linear em Estruturas de Betão e de Materiais Quási-Frágéis	Chair: Rui Faria, Xavier Oliver	
	Nº	Paper	Authors	Presenter
11:00-11:15	092	Modelling crack failure and repair by hybrid-Trefftz stress finite elements	Maria José Quirino Rosa Duarte and João António Teixeira de Freitas	Maria José Quirino Rosa Duarte
11:15-11:30	143	Numerical Assessment of the Out-of-plane Response of a Brick Masonry Structure Without Box Behaviour	Cesar Chacara, Paulo B. Lourenço and Nuno Mendes	Cesar Chacara
11:30-11:45	188	Formulación de un elemento viga-columna con discontinuidades interiores para el modelado del daño en elementos de concreto reforzado	Enrique Tenorio-Montero and Gelacio Juárez-Luna	Gelacio Juárez-Luna
11:45-12:00	199	Strain injection techniques for modelling tensile crack propagation in concrete gravity dams	Ivo Dias, Javier Oliver, J.V. Lemos and Oriol Lloberas-Valls	Ivo Dias
12:00-12:15	251	Meso-scale modelling of concrete behaviour with multiple cracks	Carlos Albino, Daniel Dias-Da-Costa, Rui Graça-E-Costa, Jorge Alfaiate and Eduardo Júlio	Daniel Dias-Da-Costa
12:15-12:30	270	Elemento finito para modelar a relação aderência-escorregamento incluindo o efeito da extensão do aço na análise de estruturas de betão armado	José Santos and António Abel Henriques	José Santos

Sala 02.3	ST10	Recent Progresses in Derivative-Free Methods for Engineering Optimization	Chairs: José Aguilar Madeira, Ana L. Custódio	
	Nº	Paper	Authors	Presenter
11:00-11:15	42	Optimization of energy and water supply systems in S. Vicente, Cape Verde	Raquel Segurado, José Aguilar Madeira, Mário Costa, Neven Duic and Maria Da Graça Carvalho	Raquel Segurado
11:15-11:30	46	Minimizing sedimentation in canals: A gradient-free approach	Lino J. Alvarez-Vazquez, Aurea Martinez, Carmen Rodriguez, Miguel E. Vazquez-Mendez and Miguel A. Vilar	Lino J. Alvarez-Vazquez
11:30-11:45	55	Piezoelectric Vibrations Energy Harvesters Power Optimization Using the Finite Element Method	Agostinho Matos, José Guedes, Kuzhichalil Jayachandran and Hélder Rodrigues	Agostinho Matos
11:45-12:00	69	Clever Multistart in Multiobjective Directional Direct Search	Ana Custodio and Jose Madeira	Ana Custodio
12:00-12:15	87	Multiobjective design optimization of cruciform specimens for biaxial fatigue loading as a function of material and manufacturing limitations	Ricardo Baptista, Luis Reis, Manuel Freitas, Ricardo Claudio and José Aguilar Madeira	Ricardo Baptista
12:15-12:30	96	Diseño óptimo del sistema de control PID basado en tareas para un robot manipulador utilizando evolución diferencial	Carlos Ricaño Rea, Miguel Gabriel Villarreal Cervantes and Mario Aldape Pérez	Carlos Ricaño Rea

12:30-14:00	<b>LUNCH</b>			
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## Sessions

Monday, June 29<sup>th</sup> | 14:00 - 15:30

Grande Auditório	ST12	Heat and Mass Transfer	Chairs: Jesús María Blanco, Nuno Simões	
	Nº	Paper	Authors	Presenter
14:00-14:15	232	Effective thermal and electric conductivities of Sn-Pb welding for finite element analysis of thermoelectrics	Said Abouali, Jose Luis Perez Aparicio and Roberto Palma	Said Abouali
14:15-14:30	252	Application of Kalman Filter to support decision-making in the maintenance of heat exchangers in slurry polymerization processes	Leandro Lopes, Cristiano Fontes and Karen Pontes	Karen Pontes
14:30-14:45	258	Hydration of bean ( <i>Phaseolus vulgaris</i> ) var. "Pinto" by ultrasound	Leopoldo Rafael López-López, José Armando Ulloa, Pedro Ulises Bautista-Rosales, Petra Rosas-Ulloa, José Carmen Ramírez-Ramírez and Yessica Silva-Carrillo	Pedro Ulises Bautista-Rosales
14:45-15:00	268	Simulação CFD da limpeza de trocadores de calor com uso de granalha de aço	Pedro Henrique Almeida Brayner, José Claudino Lira Júnior, José A.P. Da Costa and Jorge Henriquez	José Claudino Lira Júnior
15:00-15:15	296	Optimal finite differences scheme for the prediction of the time lag in gas membrane permeation	Haoyu Wu, Neveen Al-Qasas, Boguslaw Kruczek and Jules Thibault	Jules Thibault

Sala 01.1	ST02	Técnicas de Reducción de Modelos	Chairs: Elías Cueto, Pedro Díez, Antonio Huerta	
	Nº	Paper	Authors	Presenter
14:00-14:15	380	Asymptotic analysis of a viscous flow in a curved pipe with elastic walls	Gonzalo Castiñeira and José Manuel Rodríguez	Gonzalo Castiñeira
14:15-14:30	82	Aplicación de la PGD en la resolución del problema de equilibrio estático en catenarias ferroviarias	Santiago Gregori, Manuel Tur, F. Javier Fuenmayor and Francisco Chinesta	Santiago Gregori
14:30-14:45	181	Real-time simulation of surgical cutting in haptic environments using computational vademecums	Carlos Quesada, David González, Iciar Alfaro, Elías Cueto and Francisco Chinesta	Carlos Quesada
14:45-15:00	318	Avaliação do erro em modelos de ordem reduzida do tipo PGD para a análise de lajes de Kirchhoff	Jose Paulo Moitinho de Almeida and Carlos Tiago	Jose Paulo Moitinho de Almeida
15:00-15:15	36	Reducción de modelos para el análisis de estructuras en tiempo real: primeros pasos	Santiago Montagud, José Vicente Aguado, Francisco Chinesta and Elías Cueto	Santiago Montagud
15:15-15:30	18	A study for computational cost optimization for influenza flu including vaccination's impact	Claudia Dias, Edilson Arruda and Pablo Souza	Claudia Dias

Sala 02.1	ST04	Biomecânica Computacional e Aplicações	Chairs: João Folgado, Renato Natal Jorge, Begoña Calvo, Estefanía Peña	
	Nº	Paper	Authors	Presenter
14:00-14:15	364	Female pelvic cavity finite element model for pelvic disorders study	Paulo Rocha, Marco Parente, Sofia Brandão, Teresa Mascarenhas, António Augusto Fernandes and Renato Natal Jorge	Marco Parente
14:15-14:30	376	Constitutive model of the pelvic floor muscles with damage process	Dulce Oliveira, Marco Parente and Renato Natal Jorge	Dulce Oliveira
14:30-14:45	363	Mechanical properties of hyperelastic materials using different loading conditions	Pedro Martins, Carla Roque and Renato Natal Jorge	Pedro Martins
14:45-15:00	200	Inverse FEM Corneal tissue characterization methodology for contact tonometry test	Miguel Angel Ariza, Angel Ortilles, Jose Felix Rodriguez and Begoña Calvo	Begoña Calvo
15:00-15:15	39	Estudo de uma prótese total na cadeia ossicular do ouvido médio	Fernanda Gentil, Marco Marques, Marco Parente, Carla Santos and Renato Natal	Fernanda Gentil
15:15-15:30	383	Using an Inverse Method to obtain the Material Parameters of the Mooney-Rivlin Constitutive Model for Pelvic Floor Muscles	Elisabete Silva, Marco Parente, Teresa Mascarenhas, Renato Natal Jorge and Sofia Brandão	Elisabete Silva

Sala 02.2	ST20	Fratura, Colapso e Comportamento Não-Linear em Estruturas de Betão e de Materiais Quási-Frágeis	Chair: Rui Faria, Xavier Oliver	
	Nº	Paper	Authors	Presenter
14:00-14:15	275	Viscoelastic concrete behaviour analysis using rigid particle detailed modelling	Carlos Serra, Nuno Monteiro Azevedo and António Lopes Batista	Carlos Serra
14:15-14:30	343	Continuum multi-scale modeling of fracture in cementitious-like materials	Manuel Alejandro Caicedo Silva, Emmanuel Roubin and Javier Oliver	Manuel Alejandro Caicedo Silva
14:30-14:45	330	On POD based reduction-order modeling in multi-scale material failure simulation	E. Roubin, M. Caicedo, J.A. Hernandez, A.E. Huespe and J. Oliver	Emmanuel Roubin
14:45-15:00	353	Simulação numérica do comportamento termomecânico do envolvimento em betão da espiral de uma turbina hidroelétrica	José Conceição, Rui Faria and Miguel Azenha	Rui Faria
15:00-15:15	372	Modelação Computacional do Comportamento Mecânico de Betão com Agregados de Borracha	António P. C. Duarte, Bruna A. Silva, Nuno Silvestre, Jorge de Brito and Eduardo Júlio	Antonio Duarte
15:15-15:30	405	Crushing and oedometric deformation of rockfill using DEM	Joao Manso, Joao Marcelino and Laura Caldeira	Joao Manso

Sala 02.3	ST10	Recent Progresses in Derivative-Free Methods for Engineering Optimization	Chairs: José Aguilar Madeira, Ana L. Custódio	
	Nº	Paper	Authors	Presenter
14:00-14:15	108	Frame structure optimization and material choice using genetic algorithms	Diogo Recheda, António Brites, Luís Sousa and João Sousa	Diogo Recheda
14:15-14:30	133	Optimization method for the design of microwave filters based on sequential stages	Ana Morán López and Jorge Ruiz Cruz	Ana Morán López
14:30-14:45	168	Shape optimization of cold-formed steel sections using DMS algorithm	Jose Madeira, Joaquim Dias and Nuno Silvestre	Jose Madeira
14:45-15:00	196	A Derivative-free Tunneling Method to Characterize Oil Reservoirs	Susana Gomez and Gustavo Ramos	Susana Gomez
15:00-15:15	382	Diseño paramétrico óptimo del mecanismo de marcha de un robot bípedo utilizando evolución diferencial	Jesús Said Pantoja-García, Miguel Gabriel Villarreal-Cervantes and Juan Carlos González-Robles	Jesús Said Pantoja-García
15:15-15:30	428	Vibration reduction in composite plate structures using constrained layer damping and multiobjective optimization	Jose Aguilar Madeira, Aurelio Araujo, Cristóvão Manuel Mota Soares and Carlos Alberto Mota Soares	Aurelio Araujo

15:30-16:00	<b>BREAK</b>			
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## Sessions

Monday, June 29<sup>th</sup> | 16:00 - 17:15

Grande Auditório	ST12	Heat and Mass Transfer	Chairs: Jesús María Blanco, Nuno Simões	
	Nº	Paper	Authors	Presenter
16:00-16:15	392	Comportamento de ETICS quando sujeitos à transferência de calor em regime dinâmico	Inês Simões, Nuno Simões and António Tadeu	Inês Simões
16:15-16:30	407	Characterization of heat transfer coefficients under closed loop controlled constant contact pressures at different die temperatures	Eneko Saenz De Argandoña, Lander Galdos and Joseba Mendiguren	Eneko Saenz De Argandoña
16:30-16:45	158	Análise da Transferência de Calor Transiente em Barragem de Concreto Através do Método dos Elementos Finitos	Tasia Hickmann, Everton Garcia, Eloy Kaviski and Liliana Gramani	Tasia Hickmann
16:45-17:00	76	Influence of the optical tissue parameters on the transmitted and reflected signals from a short-pulse laser	Pedro Pereira, Pedro Coelho and Maxime Roger	Pedro Coelho

Sala 01.1	ST08	Inverse Problems	Chair: Roberto Palma	
	Nº	Paper	Authors	Presenter
16:00-16:15	66	Análisis de sensibilidad mediante elementos finitos discontinuos Galerkin en evaluación no destructiva de materiales mediante técnicas de termografía activa	Ángel Javier Omella and Ricardo Celorrio	Ángel Javier Omella
16:15-16:30	98	Problema inverso de la determinación de resistencias eléctricas en suelos de dos capas mediante el método de redes	Freddy Antonio Ramírez Medrano, Ivan Alhama Manteca and Pedro Martínez Pagán	Freddy Antonio Ramírez Medrano
16:30-16:45	175	Derivada Topológica de Primeira e Segunda Ordem no Problema de Tomografia por Impedância Elétrica	Andrey Ferreira and Antonio Novotny	Andrey Ferreira

Sala 02.1	ST25	Physics and Mechanics at Micro and Nanoscale	Chair: Nuno Silvestre	
	Nº	Paper	Authors	Presenter
16:00-16:15	309	Analysis of the behaviour of polycrystalline materials through micromechanical simulations	Shenghua Wu, F.M. Andrade Pires and Nannan Song	Shenghua Wu
16:15-16:30	334	Determination of macroscopic yield surfaces through homogenization-based microscale analyses	Rodrigo Pinto Carvalho, Igor André Rodrigues Lopes, Shenghua Wu and Francisco Manuel Andrade Pires	Rodrigo Pinto Carvalho
16:30-16:45	370	Non-Linear Behaviour of Nanotubes under Coupled Bending-Twisting	Nuno Silvestre, Bruno Faria and José N. Canongia Lopes	Nuno Silvestre
16:45-17:00	310	Interaction between carbon nanotubes and ionic liquids	Bruno Faria, José Nuno Canongia Lopes, Nuno Silvestre, Karina Shimizu and Carlos Bernardes	Bruno Faria

Sala 02.2	ST20	Faturoa, Colapso e Comportamento Não-Linear em Estruturas de Betão e de Materiais Quási-Frágéis	Chair: Rui Faria, Xavier Oliver	
	Nº	Paper	Authors	Presenter
16:00-16:15	327	Comportamento Dinâmico de Torres Trelaçadas em Concreto Armado para Turbinas Eólicas Offshore	Luiz Antonio Soares De Souza, Carlos Chastre, Válder José Da Guia Lúcio and Sueli Tavares De Melo Souza	Luiz Antonio Soares De Souza
16:15-16:30	171	Mixed FE for strain localization in plasticity	Miguel Cervera, Lorenzo Benedetti, Michele Chiumenti and Ramon Codina	Miguel Cervera

Sala 02.2	ST16	Computational Fracture Mechanics for Polymer Composites	Chair: Pedro Camanho	
	Nº	Paper	Authors	Presenter
16:30-16:45	161	Failure envelope determination in fibre reinforced composites using asymptotic homogenization techniques	Rafael Quelho De Macedo, José Miranda Guedes, Maurício Vicente Donadon and Rafael Thiago Luiz Ferreira	Rafael Quelho De Macedo
16:45-17:00	300	Desarrollo de un sistema para la caracterización mecánica de materiales poliméricos aplicados a nuevos diseños de partes antivibratorias.	José Alfredo González Esquivel, Raúl Lesso Arroyo, Agustín Vidal Lesso, José Manuel Ávila Aguilar, Juan Antonio Brito de La Torre and Jaime Galván Ugalde	José Alfredo González Esquivel
17:00-17:15	418	Analysis of composite structures using finite fracture mechanics	Pedro Camanho, Albertino Arteiro and Giuseppe Catalanotti	Pedro Camanho

Sala 02.3	ST06	Evolutionary Algorithms And Metaheuristics In Civil Engineering and Construction Management	Chair: Jorge Magalhães Mendes	
	Nº	Paper	Authors	Presenter
16:00-16:15	19	Multiobjective optimization: time-cost application in construction	Jorge Magalhaes-Mendes	Jorge Magalhaes-Mendes
16:15-16:30	35	Tridimensional numerical finite element method to simulate deep tunnels with shotcrete lining	Paola Villalba Fiore, Américo Campos Filho and Denise Bernaud Maghous	Denise Bernaud Maghous
16:30-16:45	113	Procedimiento para la optimización de forma de dispositivos de coronación para mejora de la eficacia de pantallas acústicas	Rayco Toledo, Juan José Aznárez, Orlando Maeso and David Greiner	Rayco Toledo
16:45-17:00	115	Multi-agent combination of evolutionary algorithms and data mining for improved search in real-world optimization problems	Joaquin Izquierdo, Enrique Campbell, Idel Montalvo and Rafael Perez-García	Joaquin Izquierdo

18:00-19:30

WELCOME RECEPTION IN MUSEU DE LISBOA



## Sessions

Tuesday, June 30<sup>th</sup> | 09:00 - 12:30

09:00-09:45	Grande Auditório	Keynote Lecture	Numerical Simulation of Fluid Structure Interaction Problems in Graphics Processing Hardware; Experimental Validation	Mario Storti
09:45-10:30	Grande Auditório	Keynote Lecture	Mixed Methods in Solid Mechanics with Large Deformations	Javier Bonet

10:30-11:00	<b>BREAK</b>			
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Grande Auditório	ST17	Computational Fluid Dynamics	Chairs: Juan Carlos Ramos, Gorka Sánchez Larraona	
	Nº	Paper	Authors	Presenter
11:00-11:15	5	Cancelled Analyzing convergence of a convective dominant coupled superficial to subsurface flow	Augusto César N R Galeão, Flávio Pietrobon-Costa and Luiz Bevilacqua	Flávio Pietrobon-Costa
11:15-11:30	10	A Riemann solver for slightly compressible flow equations	Joan Soler and Pablo Gamazo	Joan Soler
11:30-11:45	28	Multilevel Monte-Carlo methods applied to the stochastic analysis of aerodynamic problems	Gabriel Bugeda and Jordi Pons-Prats	Gabriel Bugeda
11:45-12:00	45	Numerical Analysis for Particle Capture Characteristic and Curve Steepness of Impaction Sizer	C-H Huang and Y-Y Chang	C-H Huang
12:00-12:15	54	Análise numérica da influência de agulhas no perfil de velocidades de um escoamento em um túnel de vento	Luiz Fernando Ribeiro Ledo, Sérgio de Moraes Hanriot and Cristiana Brasil Maia	Luiz Fernando Ribeiro Ledo
12:15-12:30	59	Numerical Modelling of Highly Complex Flows	Jorge M M Barata and André R R Silva	Jorge M M Barata

Sala 01.1	ST01	Processamento de Imagem e Visualização	Chair: João Manuel R.S. Tavares	
	Nº	Paper	Authors	Presenter
11:00-11:15	88	Surface insertion in a tetrahedral mesh using the Meccano method	Guillermo Valentín Socorro Marrero, Elai Ruiz-Gironés, Albert Oliver Serra, José Manuel Cascón Barbero, José María Escobar Sánchez, José Sarate Ramos and Rafael Montenegro Armas	Guillermo Valentín Socorro Marrero
11:15-11:30	121	Computer-aided recognition of the fossa ovalis in cardiac CT datasets	Pedro Morais, Daniel Barbosa, Jan D'Hooge, João L. Vilaça and João Manuel R. S. Tavares	João Manuel R. S. Tavares
11:30-11:45	162	IGRAFBIOTENIST – Interface gráfica de monitorização biomecânica de tenistas	António Gomes, João Tavares and Joaquim Gabriel	António Gomes
11:45-12:00	320	Reconhecimento automático de placas de veículos utilizando processamento digital	Marcelo Silva, Ricardo Valentim, Robinson Alves and Ivanilson Júnior	Marcelo Silva
12:00-12:15	326	Generación automática de mallas cartesianas 3D geoméricamente h-adaptadas considerando representación exacta de la geometría	Onofre Marco, Luca Giovannelli, José Albelda, Manuel Tur and Juan José Ródenas	Onofre Marco

Sala 02.1	ST11	Coupled Problems and Parallel Computing in Engineering	Chair: Paulo Amado Mendes	
	Nº	Paper	Authors	Presenter
11:00-11:15	60	Diseño Acoplado de Celdas y Recargas de Combustible Nuclear mediante Algoritmos Genéticos	Juan Jose Ortiz-Servin, David A. Pelta, Jose Luis Montes and Alejandro Castillo	Juan Jose Ortiz-Servin
11:15-11:30	119	Aeroelastic Analysis of Aircraft Wings	André de Sousa Cardeira and André Calado Marta	André de Sousa Cardeira
11:30-11:45	120	Hybridized Mixed Finite Element Methods for the Coupling Stokes-Darcy Flow	Iury Igreja, Abimael F. D. Loula and Cristiane O. Faria	Iury Igreja
11:45-12:00	131	Application of LMS method to solve non-dynamics of cable equation. Coupling with second order wave solver and application on offshore structures	José Enrique Gutiérrez Romero, Julio García Espinosa, Blas Zamora Parra and Jerónimo Esteve Pérez	José Enrique Gutiérrez Romero
12:00-12:15	226	Non-linear finite element formulation of elastothermoelectric beams applied to model thermoelements in peltier devices	Roberto Palma, José Luis Pérez-Aparicio and Emma Moliner	Roberto Palma

Sala 02.2	ST18	Estabilidade, Comportamento Não Linear e Dimensionamento de Estruturas Metálicas	Chairs: Dinar Camotim, Rodrigo Gonçalves	
	Nº	Paper	Authors	Presenter
11:00-11:15	95	Análise de Estabilidade e Vibração de Barras de Parede Fina Fletidas com Secção em I através da Teoria Generalizada de Vigas (GBT)	Andréa G. Rodrigues, Márcilio Freitas, Dinar Camotim and Pedro Borges Dinis	Andréa G. Rodrigues
11:15-11:30	126	Interação Local-Distorcional-Global em Colunas de Aço Enformadas a Frio com Secção em C	Pedro Dinis, Dinar Camotim and Ben Young	Pedro Dinis
11:30-11:45	159	Interação Local-Distorcional em Colunas de Aço Enformadas a Frio com Secção em C Reforçadas na Alma	André Martins, Pedro Dinis, Dinar Camotim and Paulo Providência	André Martins
11:45-12:00	166	Encurvadura de Barras de Parede Fina com Secção Fechada sujeitas a Carregamento Arbitrário: Aplicação da Teoria Generalizada de Vigas	Rui Bebiano, Gilmar Basaglia, Dinar Camotim and Rodrigo Gonçalves	Dinar Camotim
12:00-12:15	254	Distorção em secções de parede fina aberta simétricas e periódicas	Rodrigo Gonçalves and Dinar Camotim	Rodrigo Gonçalves
12:15-12:30	256	Análise da Estabilidade em Colunas de Aço Formadas a Frio com Seções Enrijecidas	Hélio Françaço Junior, Gilmar Basaglia, Dinar Camotim and João Alberto Venegas Requena	Hélio Françaço Junior

Sala 02.3	ST26	Topology Optimization	Chair: José M. Guedes	
	Nº	Paper	Authors	Presenter
11:00-11:15	63	Topological Optimization Modelling considering Uncertainties	Paulo Cesar Vitorio Junior and Edson Denner Leonel	Hugo L. Oliveira
11:15-11:30	210	Adecuación para fabricación de estructuras óptimas basado en esqueletonización	Asahel Mendoza San Agustín and Fernando Velázquez Villegas	Asahel Mendoza San Agustín
11:30-11:45	222	Diseño óptimo de estructuras satelitales	Fernando Camacho and Fernando Velázquez	Fernando Camacho
11:45-12:00	242	Robust Topology Optimization of Structures using Kriging models	Pascual Martí-Montrull, Alberto Cordero-Martínez and Mariano Victoria-Nicolás	Pascual Martí-Montrull
12:00-12:15	250	Robust topology design of continuum structures using isolines under loading uncertainty	Mariano Victoria-Nicolás, Alberto Cordero-Martínez and Pascual Martí-Montrull	Alberto Cordero-Martínez
12:15-12:30	247	Maximizing the stiffness in composite laminated structures using DMO and a commercial FE software	Goncalo Rodrigues, João Folgado and José Miranda Guedes	Goncalo Rodrigues

12:30-14:00

**LUNCH (INCLUDING SEMNI + APMTAC MEETINGS)**



## Sessions

Tuesday, June 30<sup>th</sup> | 14:00 - 15:30

Grande Auditório	ST17	Computational Fluid Dynamics	Chairs: Juan Carlos Ramos, Gorka Sánchez Larraona	
	Nº	Paper	Authors	Presenter
14:00-14:15	70	Análisis y optimización de un caudalímetro de placa de orificio mediante CFD	Gorka S. Larraona, Ricardo Javier Bonilla, Alejandro Rivas, Raúl Antón and Juan Carlos Ramos	Gorka S. Larraona
14:15-14:30	86	High-order CFD computations with stabilized Powell-Sabin elements	Giorgio Giorgiani, Hervé Guillard and Boniface Nkonga	Giorgio Giorgiani
14:30-14:45	154	Influência do regime de escoamento em uma chaminé solar de pequeno porte	Janaina de Oliveira Castro Silva, Tauane Shaisly Fernandes, Paulo Fonsêca Marinho Júnior, Luiz Fernando Ribeiro Ledo, Sérgio de Moraes Hanriot and Cristiana Brasil Maia	Janaina de Oliveira Castro Silva
14:45-15:00	177	CFD analysis of the aerodynamic response of a twin-box deck considering different gap widths	Ruben Sanchez, Felix Nieto Mouronte, Kenny Kwok and Santiago Hernández	Felix Nieto Mouronte
15:00-15:15	193	Discrete adjoint mixing-plane formulation for multi-stage turbomachinery design	Simão Rodrigues and André Marta	Simão Rodrigues
15:15-15:30	265	Embedded Approaches: Towards the Virtual Wind Tunnel	Riccardo Rossi, Antonia Larese, Pooyan Davdand, Masoud Davari and Pavel Ryzhakov	Riccardo Rossi

Sala 01.1	ST01	Processamento de Imagem e Visualização	Chair: João Manuel R.S. Tavares	
	Nº	Paper	Authors	Presenter
14:00-14:15	390	Classificação das Atividades de Segurança de Barragens quanto às Taxonomias de Realidade Aumentada	Fabiana Peres, Sérgio Scheer, Étore de Faria, Claudio Roberto Mauricio and Adriano Da Silva	Fabiana Peres
14:15-14:30	400	Plataforma de Redes Sociais como Ferramenta de Ensino a Distância	Thiago Dias, Patricia Dias, Elton Rabelo and Gray Moita	Thiago Dias
14:30-14:45	404	Lossless coding analysis of medical images sequences based on HEVC	Paulo J. Cordeiro, Pedro Assunção and Juan A. Gómez-Pulido	Paulo J. Cordeiro
14:45-15:00	80	Image-based Localization of Wireless Capsule Endoscope	Isabel N. Figueiredo, Carlos Leal, Luis Pinto, Pedro N. Figueiredo and Richard Tsai	Luis Pinto

Sala 02.1	ST11	Coupled Problems and Parallel Computing in Engineering	Chair: Paulo Amado Mendes	
	Nº	Paper	Authors	Presenter
14:00-14:15	229	Penalty-Projection method for monolithic fluid structure interaction solver	Daniele Cerroni, Filippo Menghini and Sandro Manservigi	Daniele Cerroni
14:15-14:30	262	Numerical scheme based on convolution integrals to study thermoelectric non-equilibrium interactions with relaxation times	Roberto Palma and José Luis Pérez-Aparicio	José Luis Pérez-Aparicio
14:30-14:45	313	Performance analysis of a particle-in-cell plasma physics code on homogeneous and heterogeneous hpc systems	Xavier Sáez, Alejandro Soba, Edilberto Sánchez, Mervi Mantsinen and José María Cela	Xavier Sáez
14:45-15:00	355	Rigidez dinámica de cimentaciones tripilote para aerogeneradores marinos.	Fidel García, Guillermo M. Álamo, Luis A. Padrón, Juan J. Aznárez and Orlando Maeso	Fidel García
15:00-15:15	413	Parallel implementation of a coupled Dirichlet-Neumann algorithm for the solution of deformable two-body contact problem	Matias Rivero, Juan Carlos Cajas, Guillaume Houzeaux and Mariano Vazquez	Matias Rivero

Sala 02.2	ST21	Steel and Composite Structures	Chair: Nuno Lopes	
	Nº	Paper	Authors	Presenter
14:00-14:15	137	Encurvadura por esforço transversal em vigas metálicas com apoios de extremidade não rígidos a temperaturas elevadas	André Reis, Nuno Lopes and Paulo Vila Real	André Reis
14:15-14:30	147	Análise ao fogo de elementos estruturais em aço com secções esbeltas através de elementos finitos de viga aplicando uma lei constitutiva efetiva	Nuno Lopes, Daniela Rodrigues and Paulo Vila Real	Nuno Lopes
14:30-14:45	172	Three dimensional simulation of partially encased beams at elevated temperatures	Paulo A.G. Piloto, David Almeida, A. B Ramos-Gavilán and Luís Mesquita	Paulo A.G. Piloto
14:45-15:00	225	Avaliação numérica e experimental da resistência de vigas com secções em ómega ( $\Omega$ ) enformadas a frio de paredes esbeltas furadas	Flávio Arrais, André Reis, Nuno Lopes and Paulo Vila Real	Flávio Arrais
14:45-15:00	192	Estudo do comportamento de estruturas sandwich com núcleo em espuma metálica através de ensaios de penetração com um punção esférico	Helder Mata, Renato Natal Jorge, Abel Santos, Marco Parente, Robertt Valente and António Fernandes	Helder Mata

Sala 02.3	ST26	Topology Optimization	Chair: José M. Guedes	
	Nº	Paper	Authors	Presenter
14:00-14:15	298	Nuevos desarrollos para la optimización topológica de estructuras con restricciones en tensión	José París, Iván Couceiro, Ignasi Colominas, Fermín Navarrina and Manuel Casteleiro	José París
14:15-14:30	421	On multi-scale structural topology optimization and material design	Alex Ferrer, Juan Carlos Cante and Javier Oliver	Alex Ferrer
14:30-14:45	435	Optimização de Localização de Reforços em Painéis Planos e Cilíndricos	Hugo Hugo Filipe Macedo de Pina, Jose M. Guedes, Helder Rodrigues	Hugo Pina
14:45-15:00	75	A comparative study of different optimal control strategies of medicine administration for HIV virus treatment	Roberto Thomé, Edison Arruda, Claudia Dias, Dayse Pastore and Hyun Yang	Roberto Thomé

15:30-16:00	<b>BREAK</b>			
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## Sessions

Tuesday, June 30<sup>th</sup> | 16:00 - 19:00

Grande Auditório	ST17	Computational Fluid Dynamics	Chairs: Juan Carlos Ramos, Gorka Sánchez Larraona	
	Nº	Paper	Authors	Presenter
16:00-16:15	292	Assessment of an explicit finite element scheme to simulate viscoelastic flow	Vitoriano Ruas, Fabrício Sousa and Murilo Tomé	Vitoriano Ruas
16:15-16:30	294	Three-dimensional simulations of a conserved binary mixture using Model B	Rudimar Nos, Hector Cenicerós and Alexandre Roma	Rudimar Nos
16:30-16:45	325	Numerical analysis of a dynamic problem involving bulk-surface surfactants	Jose R. Fernandez and Cristina Núñez García	Cristina Núñez García
16:45-17:00	373	Some progress in the discretization of convection diffusion equations with arbitrary coefficients and source to reach machine accuracy	Antonio Pascau, Francisco Alcrudo and Muslum Arici	Antonio Pascau
17:00-17:15	359	Linear vs Non-linear Aeroelastic Analysis of High Aspect-Ratio Wings	Frederico Afonso, José Vale, Gonçalo Leal, Éder Oliveira, Fernando Lau and Afzal Suleman	Frederico Afonso
17:15-17:30	360	Active flutter suppression using aileron control	José Vale, Éder Oliveira, Frederico Afonso, Fernando Lau and Afzal Suleman	José Vale

Sala 01.1	ST27	Caracterização da Enformabilidade, Dano e Fractura Dúctil em Processos de Conformação Plástica	Chairs: Abel D. Santos, Lander Galdos, J. César de Sá	
	Nº	Paper	Authors	Presenter
16:00-16:15	408	Influencia de la implementación de un coeficiente de fricción variable en el proceso de embutición	Imanol Gil, Joseba Mendiguren, Lander Galdos and Eneko Saenz De Argandoña	Imanol Gil
16:15-16:30	40	Modelo numérico experimental da rugosidade no fresamento frontal de acabamento do aço AISI 4140 endurecido	Sergio L R Almeida, Marco Antonio Stipkovic, Ed Cláudio Bordinassi, Sergio Delijaicov and Marco Stipkovic Filho	Sergio L R Almeida
16:30-16:45	409	Fractional calculus based extension of the classic elastic law to represent non-linear elastic behaviors	Lander Galdos, Eneko Saenz De Argandoña and Joseba Mendiguren	Joseba Mendiguren
16:45-17:00	347	Forming Limits by Necking and Fracture in Sheet Metal Forming	Ricardo Martins, Maria Beatriz Silva and Paulo Martins	Maria Beatriz Silva
17:00-17:15	410	Analysis of the variability on the model parameter search methodology for the Chaboche kinematic hardening model	Elena Silvestre, Joseba Mendiguren, Eneko Saenz De Argandoña and Lander Galdos	Lander Galdos
17:15-17:30	332	An Elasto-Viscoplastic Damage Model: Formulation and Numerical Implementation	Fernando Pala Beirão Macedo and Francisco Manuel Andrade Pires	Fernando Pala Beirão Macedo

Sala 02.1	ST11	Coupled Problems and Parallel Computing in Engineering	Chair: Paulo Amado Mendes	
	Nº	Paper	Authors	Presenter
16:00-16:15	414	A Lagrangian Particle Transport Solver Using a Coupled Software	Edgar Olivares Mañas, Juan Carlos Cajas and Guillaume Houzeaux	Edgar Olivares Mañas
16:15-16:30	422	FEMPAR: a domain-decomposition-based code for parallel finite element multiphysics simulations	Santiago Badia, Alberto Martín and Javier Principe	Javier Principe
16:30-16:45	160	A two-step numerical procedure for the analysis of re-radiated noise from underground transportation means	Luis Godinho, Paulo Amado Mendes and Pedro Alves Costa	Luis Godinho
16:45-17:00	338	Computational Strategies to Speed Up the Solution of Homogenization-based Multi-Scale Problems	Igor André Rodrigues Lopes and Francisco Manuel Andrade Pires	Igor André Rodrigues Lopes

Sala 02.2	ST21	Steel and Composite Structures	Chair: Nuno Lopes	
	Nº	Paper	Authors	Presenter
16:00-16:15	282	Shape & size optimization of truss structures applied to power transmission towers	Iván Couceiro, Santiago Martínez, José París, Luis Ramírez and Ignasi Colominas	Iván Couceiro
16:15-16:30	303	Avaliação do Efeito da Interação Solo-Estrutura sobre a Resposta Estrutural de Edifícios Mistos (Aço-Concreto)	José Guilherme Santos Da Silva, Ana Cristina Castro Fontena Sieira and Flávio Dos Ramos Sousa Mendonça	Flávio Dos Ramos Sousa Mendonça
16:30-16:45	374	Resistência de ligações aparafusadas autopercutantes de chapas finas de perfis enformados a frio a temperaturas elevadas	Luis M. R. Mesquita, Armandino Parente, Rui Dias, Luisa Barreira and Paulo Piloto	Luis M. R. Mesquita
16:45-17:00	216	Modelagem da Deflexão de uma Placa Retangular através do Método das Diferenças Finitas	Adilandri Mércio Lobeiro, Giovani de Madureira Alves Sobrinho and Liliانا Madalena Gramani	Liliana Madalena Gramani

Sala 02.3	ST07	Computational Modeling in Mechanobiology and Tissue Engineering	Chair: Paulo Fernandes	
	Nº	Paper	Authors	Presenter
16:00-16:15	90	Three Dimensional Colonic Crypt Model	Giuseppe Romanazzi, Isabel Figueiredo and Carlos Leal	Giuseppe Romanazzi
16:15-16:30	211	The Correction of the Vestibular System Inertial Biosensors	Vladimir Aleksandrov, María Alicia Lizbeth Ángeles Vázquez, Maribel Reyes Romero, Tamara B. Alexandrova, Katerina V. Tikhonova, Rosario Vega and Enrique Soto	Maribel Reyes Romero
16:30-16:45	223	The effect of BMP-2 on large bone defects: an in silico study	Frederico Ribeiro, Maria-José Gómez-Benito, João Folgado, Paulo Fernandes and José-Manuel García-Aznar	Frederico Ribeiro
16:45-17:00	434	Multibody Minimum-energy Trajectory with Application to Protein Folding	Carlos Leandro, Carlos Alves, Jorge Ambrósio	Carlos Leandro

18:00-19:00	Sala 02.1	SEMNI Assembly
18:00-19:00	Sala 02.2	APMTAC Assembly



## Sessions

Wednesday, July 1<sup>st</sup> | 09:00 - 12:30

09:00-09:45	Grande Auditório	Keynote Lecture	Advances in the Meso-modeling of Laminates for the Prediction of Energy Absorption	Olivier Allix
09:45-10:30	Grande Auditório	Keynote Lecture	High-Fidelity Multidisciplinary Design Optimization for the Next Generation of Aircraft	Joaquim Martins

10:30-11:00	<b>BREAK</b>			
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Grande Auditório	ST17	Computational Fluid Dynamics	Chairs: Juan Carlos Ramos, Gorka Sánchez Larraona	
	Nº	Paper	Authors	Presenter
11:00-11:15	417	On the calculation of the flow around 2-D square cylinder with rounded corners	Hugo Abreu, Luís Eça and Guilherme Vaz	Hugo Abreu
Grande Auditório	ST19	Higher-Order Finite Volume Methods	Chair: Xesus Nogueira	
11:15-11:30	32	A high-order finite volume method for all speed flows	Xesus Nogueira, Luis Ramírez Palacios, Sofiane Khelladi, Jean-Camille Chassaing and Ignasi Colominas	Xesus Nogueira
11:30-11:45	316	A higher-order collocated finite volume method for the resolution of the incompressible navier stokes on unstructured grids	Luis Ramirez, Xesus Nogueira, Sofiane Khelladi, Jean-Camille Chassaing, Iván Couceiro and Ignasi Colominas	Luis Ramirez
11:45-12:00	344	eXtended Hybridizable Discontinuous Galerkin (X-HDG) for bimaterial problems	Sonia Fernandez-Mendez, Ceren Gurkan, Esther Sala-Lardies and Martin Kronbichler	Sonia Fernandez-Mendez
12:00-12:15	345	A quality-based framework to generate and validate curved meshes for unstructured high-order methods	Abel Gargallo-Peiró, Eloi Ruiz-Gironés, Xevi Roca, Jaime Peraire and Josep Sarrate	Jose Sarrate

Sala 01.1	ST05	Métodos sem Malha	Chairs: Jorge Belinha, Carlos Alves	
	Nº	Paper	Authors	Presenter
11:00-11:15	12	Mould Filling Simulation Using Finite Pointset Method	Felix R. Saucedo-Zendejo and Edgar O. Resendiz-Flores	Felix R. Saucedo-Zendejo
11:15-11:30	48	Inverse problem estimation of a two-dimensional thermal contact conductance using the reciprocity functional	Camila Lacerda and Marcelo Colaco	Marcelo Colaco
11:30-11:45	116	The crack propagation numerical analysis using a meshless method	Jorge Belinha, José Azevedo, Lúcia Dinis and Renato Natal Jorge	Jorge Belinha
11:45-12:00	157	Un Método de Colocación Sin Malla obtenido a partir de la Ecuación Integral de Contorno Indirecta y su Aplicación a Problemas de Laplace y Helmholtz	Sebastian Sensale, Alfredo Canelas and Berardi Sensale	Berardi Sensale
12:00-12:15	289	A qualitative analysis of fluid simulation using a SPH variation	André Luiz Vieira E Silva, Mozart William Almeida, Caio José Brito, Veronica Teichrieb, José Maria Barbosa and Cesar Augusto Moreno	Mozart William Almeida

Sala 02.1	ST22	Geotechnics and Geoen지니어ing	Chair: Rafael Jiménez	
	Nº	Paper	Authors	Presenter
11:00-11:15	33	Numerical simulation of consolidation in layered soils under variable loads	Gonzalo García Ros, Iván Alhama Manteca and Francisco Alhama López	Gonzalo García Ros
11:15-11:30	74	Modelado numérico del fenómeno de torque y arrastre y centralización en tuberías de completación de pozos de petróleo y gas	Geralf Pineda, Manuel J. Martinez, Vicente L. Ciccola and Zamaira E. Chacon	Geralf Pineda
11:30-11:45	79	A numerical study for the simplification of large scenarios of seepage under dams	Pablo Ortiz, Iván Alhama and Francisco Alhama	Pablo Ortiz
11:45-12:00	186	Inverse sensitivity analyses for Decision Analyses related to Contaminant Remediation	Velimir Vesselinov	Velimir Vesselinov
12:00-12:15	190	Propuesta de algoritmo genético con operadores personalizados para el análisis de la estabilidad de taludes	Rafael Jiménez-Rodríguez and Rafael Jurado-Piña	Rafael Jiménez-Rodríguez
12:15-12:30	212	Análisis del efecto arco en suelos no-cohesivos a partir de modelos numéricos continuos (FLAC) y discretos (PFC)	Salvador Senent, José Vieira Lemos and Rafael Jimenez	Salvador Senent

Sala 02.2	ST03	Métodos Computacionais em Acústica e Vibrações	Chairs: Luis Godinho, Jaime Ramis	
	Nº	Paper	Authors	Presenter
11:00-11:15	145	Approximation of waves written in mixed form in time dependent domains	Ramon Codina, Oriol Guasch, Marc Arnella and Héctor Espinoza	Ramon Codina
11:15-11:30	14	High-order Hermitian Algorithm for Non-linear Dynamics	José Laier	José Laier
11:30-11:45	38	The computation dynamics of electromagnetic radiation in 3D dispersive metamaterials.	Gennadiy Burlak	Gennadiy Burlak
11:45-12:00	104	Modelado de motores de compresión utilizando la teoría de circuitos y el método de las soluciones fundamentales	Jaime Ramis, Paulo A. Mendes, Luis M. C. Godinho and Jesús Carbajo	Jaime Ramis
12:00-12:15	136	Resistencia al flujo de paneles perforados	Jesús Carbajo, Luis Godinho, Paulo Amado Mendes and Jaime Ramis	Jesús Carbajo
12:15-12:30	81	BEM-FEM formulation in time domain for SSI analyses in layered soils	Antonio Romero Ordóñez, Daniel López-Mendoza and Pedro Galvín Barrera	Daniel López-Mendoza

Sala 02.3	ST27	Caracterização da Enformabilidade, Dano e Fractura Dúctil em Processos de Conformação Plástica	Chairs: Abel D. Santos, Lander Galdos, J. César de Sá	
	Nº	Paper	Authors	Presenter
11:00-11:15	244	On the hardening curve determination using uniaxial tensile and hydraulic bulge test – application to dual-phase steels (DP500, DP600 and DP780)	Rui Amaral, Abel D. Santos, A. B. Lopes and José A. Sousa	Rui Amaral
11:15-11:30	246	Determinação da curva de encruamento de chapas metálicas com o ensaio hidráulico de expansão	Hugo Campos and Abel Santos	Hugo Campos
11:30-11:45	361	Assessment of high and low stress triaxiality ductile failure models	Pedram Farahnak, Erfan Azinpour, Abel D. Santos and Jose M. A. Cesar de Sa	Abel D. Santos
11:45-12:00	279	Flange forming simulation using finite element analysis	Amando Gallardo and Raúl Lesso	Amando Gallardo
12:00-12:15	378	Thermal gradients prediction in the gleeble system using a 3D finite element model	João Martins, Luís Alves, Diogo Neto, Marta Oliveira and Luís Menezes	João Martins
12:15-12:30	377	Numerical Modelling of Single Point Incremental Sheet Forming Process	Diogo M. Neto, Marta C. Oliveira, Luís F. Menezes and José L. Alves	Diogo M. Neto

12:30-14:00	<b>LUNCH</b>			
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## Sessions

Wednesday, July 1<sup>st</sup> | 14:00 - 15:30

Grande Auditório	ST25	Physics and Mechanics at Micro and Nanoscale	Chair: Nuno Silvestre	
	Nº	Paper	Authors	Presenter
14:00-14:15	84	Stability of structured grain boundaries in graphene	Francisco Arca, Juan Mendez and Pilar Ariza	Pilar Ariza
14:15-14:30	85	Atomistic modeling of heat conduction in nanomaterials	Carlos S. Martin, Michael Ortiz and Pilar Ariza	Carlos S. Martin
14:30-14:45	259	Efficient simulation of the effective g-factor for carriers confined in semiconductor nano-objects	Li-Wei Yang, Chin-Min Yang, Yiming Li and Oleksandr Voskoboynikov	Oleksandr Voskoboynikov
14:45-15:00	314	Important Input to Modelling Solidification	Dieter Herlach	Dieter Herlach
15:00-15:30	432	Finite element model of voice control system	Raycho Ilarionov, Todor Todorov, Georgi Tsanev and Stanimir Yordanov	Georgi Tsanev
Sala 01.1	ST05	Métodos sem Malha	Chairs: Jorge Belinha, Carlos Alves	
	Nº	Paper	Authors	Presenter
14:00-14:15	291	Implementação do método Smoothed Particle Hydrodynamics para modelagem de escoamento de fluido interagindo com estrutura	Edgar Andrés Patino Narino and Luiz Otávio Saraiva Ferreira	Edgar Andrés Patino Narino
14:15-14:30	352	Análise axissimétrica de placas circulares usando o método de interpolação radial pontual	Behzad Vasheghani Farahani, José Manuel Berardo, Rafal Drgas, José César de Sá, António Ferreira and Jorge Belinha	José Manuel Berardo
14:30-14:45	394	RBF interpolation in dimension D as MFS approximation in dimension D+1	Carlos J. S. Alves	Carlos J. S. Alves
14:45-15:00	427	An Isotropic Elastic Damage Model for Concrete Material Using a Meshless Method	Behzad Vasheghani Farahani, Francisco Pires, José César de Sá, António Ferreira and Jorge Belinha	Behzad Vasheghani Farahani
15:00-15:15	366	Debris flow modelling with high-performance meshless methods	Ricardo B. Canelas, Jose M. Dominguez, Alex J.C. Crespo, Miguel Silva and Rui Ferreira	Rui Ferreira

Sala 02.1	ST22	Geotechnics and Geoen지니어ing	Chair: Rafael Jiménez	
	Nº	Paper	Authors	Presenter
14:00-14:15	235	Método Probabilístico Avaliação da Estabilidade de Barragens de Aterro um Estudo de Itaipu	Tereza Rachel Mafioleti, Anselmo Chaves Neto, Josiele Patias, Sheila Regina Oro and Luiz Albino Teixeira Júnior	Tereza Rachel Mafioleti
14:15-14:30	237	Respuesta sísmica de estructuras de edificación cimentadas sobre pilotes inclinados	Cristina Medina, Luis A. Padrón, Juan J. Aznárez and Orlando Maeso	Cristina Medina
14:30-14:45	240	Work – Energy balance for Discrete Element Method on the example of shear stress tests.	Varvara Roubtsova, Mohamed Chekired, Mourad Karray and Smaneh Amirpour	Varvara Roubtsova
14:45-15:00	283	Modelagem de equações estruturais aplicada na avaliação dos fatores relacionados com a variabilidade dos dados de monitoramento de uma barragem de concreto	Sheila Regina Oro, Anselmo Chaves Neto, Suellen Ribeiro Pardo Garcia and Tereza Rachel Mafioleti	Sheila Regina Oro
15:00-15:15	433	Numerical analysis of sedimentation grading size distribution experiment using the Discrete Element Method	R. Bravo, J.L. Pérez-Aparicio, J.J. Gómez-Hernández	Rafael Bravo
15:15-15:30	109	Influência de escoamento vertical na capacidade resistente de fundações superficiais impermeáveis	Francisco Melo Franco, Armando Nunes Antão, Mário Vicente Da Silva and Nuno Guerra	Francisco Melo Franco
Sala 02.2	ST03	Métodos Computacionais em Acústica e Vibrações	Chairs: Luis Godinho, Jaime Ramis	
	Nº	Paper	Authors	Presenter
14:00-14:15	152	Estudo de problemas de vibrações em barragens usando análise isogeométrica	Rodnny J. Mendoza Fakhye, Roberto Dalledone Machado, Mateus Rauhen and Marcos Arndt	Rodnny J. Mendoza Fakhye
14:15-14:30	165	2.5D numerical analysis of the acoustic behaviour of sonic crystal type barriers	Paulo Amado-Mendes, Luis Godinho, Pedro Gil Santos, Jaime Ramis and Jesús Carbajo	Paulo Amado-Mendes
14:30-14:45	271	Aplicação do Método do Elementos Finitos, Análise Isogeométrica e Métodos Enriquecidos a análise dinâmica 1D	Paulo De Oliveira Weinhardt, Mateus Rauhen, Marcos Arndt and Roberto Dalledone Machado	Roberto Dalledone Machado
14:45-15:00	277	CFD study of the acoustic performance of simple expansion chamber mufflers	Juan Luis Cepeda Aguilar, Omar López, Julian Arroyo and Andres Gonzalez-Mancera	Juan Luis Cepeda Aguilar
15:00-15:15	395	Estudo sobre a Propagação Acústica em Águas Rasas	Emerson S. Costa and Eduardo B. Medeiros	Emerson S. Costa
15:15-15:30	2	Ensaio sobre a fluência na vibração de colunas	Alexandre Wahrhaftig and Reyolando M. L. R. F. Brasil	Alexandre Wahrhaftig
Sala 02.3	GS03	Metodos Computacionais em Previsão	Chair: José M. Guedes	
	Nº	Paper	Authors	Presenter
14:00-14:15	111	Uso de métodos ensemble para la predicción de la radiación solar	Gustavo Montero, Felipe Díaz, Hendrix Montero, Eduardo Rodríguez, José María Escobar and Rafael Montenegro	Gustavo Montero
14:15-14:30	227	Modelo matemático estatístico-genético de Boltzmann-Gibbs de distribuição de diamantes nos kimberlitos por massa dos seus cristais	Vladimir Zinchenko, Viktor Dech and João Tunga Felix	João Tunga Felix
14:30-14:45	241	Monitoramento de movimentos relativos em barragem de concreto via modelo estatístico multivariado	Suellen Ribeiro Pardo Garcia, Anselmo Chaves Neto, Cláudio Neumann Júnior and Sheila Regina Oro	Anselmo Chaves Neto
14:45-15:00	263	Desarrollo de un método ensemble para la predicción del viento a escala local usando elementos finitos	Eduardo Rodríguez, Albert Oliver, Rafael Montenegro and Gustavo Montero	Eduardo Rodríguez
15:00-15:15	324	Large scale analysis of the river flow fluctuations in Brazil	Adriana C. Braga, Ademir A. Ribeiro, Manoel M. A. De Jesus, Rodolfo T. Teixeira and Haroldo V. Ribeiro	Adriana C. Braga
15:15-15:30	358	Nuevas estrategias de cálculo numérico de tirantes normales en canales rectangulares	Wilson Rodríguez Calderón and Myriam Rocío Pallares Muñoz	Myriam Rocío Pallares Muñoz
15:30-16:00	<b>BREAK</b>			



## Sessions

Wednesday, July 1<sup>st</sup> | 16:00 - 17:00

Grande Auditório	ST04	Biomecânica Computacional e Aplicações	Chairs: João Folgado, Renato Natal Jorge, Begoña Calvo, Estefanía Peña	
	Nº	Paper	Authors	Presenter
16:00-16:15	336	Experimental and numerical procedure to determine the failure properties due to deep penetration of vena cava tissue	Quercus Hernández and Estefanía Peña	Estefanía Peña
16:15-16:30	337	Development of a general Ground Contact model for Analysis and Simulation of Human Gait	João A. Marques, Sérgio Gonçalves and Miguel T. Silva	João A. Marques
16:30-16:45	335	Estudio numérico-experimental del comportamiento mecánico de la fascia superficial y profunda	Juan Antonio Peña, David Ruiz-Alejos, Miguel A. Martínez and Estefanía Peña	Juan Antonio Peña
16:45-17:00	228	Modelo biomecânico do membro superior com uma articulação do ombro com 6 graus de liberdade	Carlos Quental, João Folgado, Jorge Ambrósio and Jacinto Monteiro	Carlos Quental

Sala 01.1	ST13	Numerical Methods for Building Energy Simulation	Chair: Jesús María Blanco, Nuno Simões	
	Nº	Paper	Authors	Presenter
16:00-16:15	64	Characterization of wood samples through numerical simulation based on a test validation bench procedure	Belinda Pelaz, Jesús Cuadrado, Jesús M. Blanco and Eduardo Rojí	Belinda Pelaz
16:15-16:30	65	Numerical model development for the optimization of wood coating enclosures	Belinda Pelaz, Jesús Cuadrado, Jesús M. Blanco and Eduardo Rojí	Jesús M. Blanco
16:30-16:45	393	Study of ventilated solar walls in a Mediterranean climate, installed in residential and office buildings.	Nuno Simões, Mário Manaia and Inês Simões	Nuno Simões
16:45-17:00	416	EnergyPlus Simulator of the Civil Engineering building of the IST Alameda campus	Gonçalo Marçal, Mário Matos and Luís Eça	Gonçalo Marçal

Sala 02.1	ST22	Geotechnics and Geoen지니어ing	Chair: Rafael Jiménez	
	Nº	Paper	Authors	Presenter
16:00-16:15	110	<b>Determinação de impulsos de terras através de implementação numérica dos teoremas estático e cinemático</b>	<i>Nuno Deusdado, Armando Nunes Antão, Mário Vicente Da Silva and Nuno Guerra</i>	<i>Nuno Deusdado</i>
16:15-16:30	138	<b>VGCM2D-Flexible: A generalized particle contact model for rock fracture taking into account particle deformability</b>	<i>Nuno Azevedo, Maria Luísa Braga Farinha and Marilene Candeias</i>	<i>Nuno Azevedo</i>
16:30-16:45	139	<b>A Particle/Particle Interface Model Including Surface Roughness for Stability Analysis of Arch Dam Foundations</b>	<i>Nuno Azevedo and Maria Luísa Braga Farinha</i>	<i>Maria Luísa Braga Farinha</i>
16:45-17:00	389	<b>Impact of different subballast solutions on the service life of the railway substructure</b>	<i>Tiago Moço-Ferreira and Paulo Teixeira</i>	<i>Tiago Moço-Ferreira</i>

Sala 02.2	ST24	Dynamic Effects in High-Speed Railway Tracks	Chair: Cristina Alves Ribeiro	
	Nº	Paper	Authors	Presenter
16:00-16:15	122	<b>Soil-structure interaction effects on the transverse response of beam bridges under moving loads and its application to railway traffic</b>	<i>Alejandro Doménech, Antonio Romero Ordóñez, Maria D. Martínez-Rodrigo and Pedro Galvín Barrera</i>	<i>Maria D. Martínez-Rodrigo</i>
16:15-16:30	144	<b>Assessment of the short and long term behaviour of the track at a railway transition zone</b>	<i>Cristina Alves Ribeiro, Rui Calçada and Raimundo Delgado</i>	<i>Cristina Alves Ribeiro</i>
16:30-16:45	213	<b>Analysis of the influence of the permanent deformation of ballast layer in the railway track degradation based on numerical simulations</b>	<i>Diogo Catarino, Cristina Alves Ribeiro and Cecília Vale</i>	<i>Cecília Vale</i>

Sala 02.3	GS03	Metodos Computacionais em Previsão	Chair: Nuno Silvestre	
	Nº	Paper	Authors	Presenter
16:00-16:15	369	<b>Previsão de série temporal de subpressão usando regressão dinâmica múltipla com modelagem de série temporal de resíduos aplicada à barragem principal de Itaipu</b>	<i>Júlio César Royer, Volmir Eugênio Wilhelm and Josiele Patias</i>	<i>Júlio César Royer</i>
16:15-16:30	425	<b>Un modelo numérico para cuantificar la reducción de la vida útil del firme producida por la carga dinámica de rodadura</b>	<i>Fermín Navarrina, Luis Ramírez, José París, Xesús Nogueira, Ignasi Colominas, Manuel Casteleiro and José Ramón Fernández-De-Mesa</i>	<i>Fermín Navarrina</i>
16:30-16:45	381	<b>Modelação numérica de edifícios de alvenaria de pedra calibrados com ensaios de caracterização dinâmica</b>	<i>Ivo Dias, Jorge Gomes, Alfredo Costa and Paulo Candeias</i>	<i>Jorge Gomes</i>
16:45-17:00	106	<b>Previsões Pontuais e Intervalares Híbridas de Deslocamento de Barragens</b>	<i>Jairo Marlon Corrêa, Anselmo Chaves Neto, Luiz Albino Teixeira Júnior, Edgar Manuel Carreño Franco, Reinaldo Souza Castro and Alvaro Eduardo Faria</i>	<i>Jairo Marlon Corrêa</i>

20:00	<b>CONFERENCE DINNER IN KAIS RESTAURANT</b>
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## Sessions

Thursday, July 2<sup>nd</sup> | 09:45 - 12:00

09:45-10:30	Grande Auditório	Keynote Lecture	Purely-elastic instabilities in microscale flows of complex fluids	Manuel A. Alves
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10:30-11:00	BREAK			
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Grande Auditório	ST09	Isogeometric Analysis (IGA)	Chairs: Fermín Navarrina, Robertt Valente	
	Nº	Paper	Authors	Presenter
11:00-11:15	93	On the alleviation of locking pathologies in Isogeometric Analysis: An Assumed Natural Strain (ANS) NURBS solid-shell formulation for the analysis of thin structures	João Caseiro, Robertt Valente, Josef Kiendl, Alessandro Reali, Ferdinando Auricchio and Ricardo Alves de Sousa	Robertt Valente
11:15-11:30	357	Development of an open source pedagogical tool for modelling with T-Splines	M. Airoso, D. Cardoso, R.A.F. Valente, J.F. Caseiro and J.A. Oliveira	Marlene Airoso
11:30-11:45	367	Development of an open-source computational framework based on Isogeometric Analysis	D. Cardoso, J.F. Caseiro, M. Airoso, J. Dias-De-Oliveira and R.A.F. Valente	Diogo Cardoso
11:45-12:00	156	Elasto-plastic analysis of structures using an Isogeometric formulation	João Pedro Ferreira, Marco Parente and Renato Natal Jorge	Renato Natal Jorge

Sala 01.1	GS02	Optimização	Chair: José M. Guedes	
	Nº	Paper	Authors	Presenter
11:00-11:15	53	Otimização da análise de variabilidade de blocos chaves da barragem de Itaipu com o uso de novas estratégias na coleta de dados e técnicas para normalização dos escores fatoriais	Orlando Silva, Jair Marques, Cleverson Santos, Cassius Scarpin and Itamar Nieradka	Cleverson Gonçalves dos Santos
11:15-11:30	114	Um Método Misto de Barreira e de Barreira Modificada e o Fluxo de Potência Ótimo	Jéssica Antonio Delgado, Edméa Cássia Baptista, Edilaine Martins Soler, Antonio Roberto Balbo and Leonardo Nepomuceno	Edméa Cássia Baptista
11:30-11:45	255	Uma abordagem sequencial para otimização de rotas dos caminhões de coleta de resíduos sólidos	Thelma Pretel Brandão Vecchi, Luiz Mario M. Jorge, Mauro Antonio S. S. Ravagnani, Ademir A. Constantino, Douglas Fukunaga Surco, Maria Teresinha A. Steiner and Paulo Roberto Paraíso	Thelma Pretel Brandão Vecchi
11:45-12:00	329	Comparison of Minimization Techniques for Untangling and Smoothing High-order Meshes	Eloi Ruiz-Gironés, Shadi Alameddine, Xevi Roca and Jose Sarrate	Eloi Ruiz-Gironés

Sala 02.1	GS01	Mathematical Problems in Engineering	Chair: Nuno Silvestre	
	Nº	Paper	Authors	Presenter
11:00-11:15	78	Analysis and design of horn antennas with arbitrary profile using Mode-Matching	Lucas Polo-López, Jorge A. Ruiz-Cruz, Juan Córcoles and Carlos A. Leal-Sevillano	Lucas Polo-López
11:15-11:30	94	Resolución de problemas de contacto 3D en mallas Cartesianas con representación exacta de la geometría.	José Manuel Navarro-Jiménez, Onofre Marco, Manuel Tur and Juan José Ródenas	José Manuel Navarro-Jiménez
11:30-11:45	399	The bipenalty method in computational dynamics	Jack Hetherington, Antonio Rodriguez-Ferran and Harm Askes	Antonio Rodriguez-Ferran
11:45-12:00	260	Numerical study of multiphase flows of viscoelastic fluids in a sudden contraction-expansion	Artur Sucena, Alexandre Afonso, Manuel Alves and Fernando Pinho	Artur Sucena
12:00-12:30	280	Análisis de sistemas de protección mediante tomas de tierra en subestaciones eléctricas compactas	Raquel Guizán, Ignasi Colominas, José París, Fermín Navarrina and Manuel Casteleiro	Raquel Guizán

Sala 02.2	GS04	Algoritmos Genéticos e Redes Neuronais	Chair: João Folgado	
	Nº	Paper	Authors	Presenter
11:00-11:15	47	Application of genetic algorithms for the calibration of an air quality model and its validation using pollutant measures from the surroundings of an electric power plant	Jabel Ramirez, Albert Oliver and Eduardo Rodríguez	Jabel Ramirez
11:15-11:30	124	A Genetic Algorithm based on Abstract Data Types for Internet Traffic Optimization	Higor D. C. Cabral, Roberta V. V. Lopes, Marcelo Embiruçu and Karen V. Pontes	Higor D. C. Cabral
11:30-11:45	127	An Genetic Algorithm Based on Abstract Data Types for Electrocardiography Wave Detection	Carlos Cabral, Karen Pontes, Cristiano Fontes and Roberta Lopes	Carlos Cabral
11:45-12:00	214	Projeção do diâmetro e altura de árvores em uma Floresta Estacional Semidecidual por meio de redes neurais artificiais	Renato Castro, Carlos Soares and Ana Flávia Castro	Renato Castro

Sala 02.3	GS05	Métodos Computacionais em Processos Industriais	Chair: Miguel Tavares da Silva	
	Nº	Paper	Authors	Presenter
11:00-11:15	97	Novo método para a caracterização de compressores na presença de incerteza	Rodrigo Lima Meira, Glória Meyberg Nunes Costa, Ricardo de Araújo Kalid and Karen Valverde Pontes	Rodrigo Lima Meira
11:15-11:30	281	Simulation of a Pressure Swing Adsorption system – modeling a modular adsorption unit	Márcio Neto, Rafael Ferreira and Marcelo Cardoso	Márcio Neto
11:30-11:45	285	Optimal Allocation and Sizing of Distributed Generation in Distribution Network	Babak Farhang Moghaddam and Elham Farhash	Babak Farhang Moghaddam
11:45-12:00	146	Comparative Analysis of Power Divider Networks with Large Number of Ports using different Numerical Methods	Raul Haro Baez, Jorge Ruiz Cruz, José Luis Masa and Pablo Sánchez Olivares	Jorge Ruiz Cruz
12:15-12:30	322	Integration of a phenomenological elastic-plastic model within a commercial FEA package	Vitor Anes, Manuel Freitas and Luis Reis	Vitor Anes

12:30-13:00	GRANDE AUDITÓRIO	CLOSING SESSION
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