

5<sup>th</sup> International Conference on Maritime Technology and Engineering

Celebrating 40 years of teaching Naval Architecture  
and Ocean Engineering and the 25<sup>th</sup> anniversary of CENTEC



## PROGRAMME

16-19 November 2020

IST Congress Centre, Lisbon and Online participation via ZOOM

# ORGANIZATION

## Conference co-Chairs

**Carlos Guedes Soares**

*Técnico Lisboa*

**Pedro Ponte**

*Ordem dos Engenheiros*

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- H.L. Ren, Harbin Engineering University, China
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- L. Rusu, University Dunarea de Jos Galati, Romania
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- W. Tarelko, Gdansk University of Technology, Poland
- M. Viviani, University of Genova, Italy
- D. Wang, Shanghai Jiao Tong University, China
- J. Wang, Liverpool John Moores University, UK
- X. Yan, Wuhan University of Technology, China
- S. Zhang, Lloyds Register, UK
- P. Zhou, University of Strathclyde, UK
- X. Zhou, Harbin Engineering University, China

## SCHEDULE AT A GLANCE

<b>Monday, 16th November 2020</b>			
<b>Registration (from 8h00 onwards)</b>			
<b>IST Congress Centre and Online</b>			
<b>Opening Session (8h30-8h45)</b> C. Guedes Soares and Pedro Ponte			
<b>Plenary Session (8h45-9h20)</b> Forty years of teaching NAOE at IST and 25 years of CENTEC C. Guedes Soares			
<i>Coffee-break (9h20-9h30)</i>			
<i>Session 1.1 (9h30-11h00)</i> Hydrodynamics – CFD B. el Moctar & A. Souto-Iglesias	<i>Session 2.1 (9h30-11h00)</i> Ship Structures 1 P. Georgiev & Y. Garbatov	<i>Session 3.1 (9h30-11h00)</i> Ship Design 1 A. Papanikolaou & T. Santos	<i>Session 4.1 (9h30-11h00)</i> Waves and Currents E. Rusu & Sheng Dong
<i>Coffee-break (11h30-11h30)</i>			
<i>Session 1.2 (11h30-13h00)</i> Ship Hydrodynamics - CFD N. Ma & Shan Wang	<i>Session 2.2 (11h30-13h00)</i> Ship Structures 2 J. Parunov & M. Biot	<i>Session 3.2 (11h30-13h00)</i> Ship Design 2 D. Boote & M. Ventura	<i>Session 4.2 (11h30-13h00)</i> Wave Modelling in Storms E. Bitner-Gregersen & S. Caires
<i>Lunch (13h00-14h30)</i>			
<i>Session 1.3 (14h30-16h00)</i> Ship Hydrodynamics S. Brizzolaro & E. Begovic	<i>Session 2.3 (14h30-16h00)</i> Ship Structures 3 S. Ehlers & Z. Hu	<i>Session 3.3 (14h30-16h00)</i> Ship Design 3 M. Altosole & S. Sutulo	<i>Session 4.3 (14h30-16h00)</i> Renewable Energy 1 G. Lavidas & S. Ponce
<i>Coffee-break (16h00-16h30)</i>			
<i>Session 1.4 (16h30-18h00)</i> Ship Hydrodynamics – Resistance 1 R. Dejhalla & K. Belibassakis	<i>Session 2.4 (16h30-18h00)</i> Ship Structures – Impact J. Amdahl & R. Villavicencio	<i>Session 3.4 (16h30-18h00)</i> Ship Design 4 L. Moro & BQ. Chen	<i>Session 4.4 (16h30-18h00)</i> Renewable Energy 2 L. Rusu & R. Campos
<b>Tuesday, 17th November 2020</b>			
<b>Registration (from 8h30 onwards)</b>			
<i>Session 1.5 (9h00-10h30)</i> Ship Hydrodynamics – Resistance 2 J. Liu & N. Degiuli	<i>Session 2.5 (9h00-10h30)</i> Ship Structures – Ultimate Strength 1 L. Zhu & Shengming Zhang	<i>Session 3.5 (09h00-10h30)</i> Ship Design – Cruise Ships 1 M. Ventura & H. Jafaryeganeh	<i>Session 4.5 (9h00-10h30)</i> Renewable Energy 3 L. Castro-Santos & M. Bernardino
<i>Coffee-break (10h30-11h00)</i>			
<i>Session 1.6 (11h00-12h30)</i> Ship Performance 1 R. Vettor & J. Szlapczynska	<i>Session 2.6 (11h00-12h30)</i> Ship Structures – Ultimate Strength 2 Dy. Wang & S. Benson	<i>Session 3.6 (11h00-12h30)</i> Ship Design - Cruise Ships 2 E. Boulougouris & B. Liu	<i>Session 4.6 (11h00-12h30)</i> Renewable Energy 4 Zhen Gao & M. Karimirad
<i>Lunch (12h30-14h00)</i>			
<i>Session 1.7 (14h00-15h30)</i> Ship Performance 2 J. Prpic-Oršic & W. Qiu	<i>Session 2.7 (14h00-15h30)</i> Ship Structures – Ultimate Strength 3 F. Khan & M. Taczala	<i>Session 3.7 (14h00-15h30)</i> Maritime Transportation and Ports 1 H. Psaraftis & A. Martinez-López	<i>Session 4.7 (14h00-15h30)</i> Renewable Energy 5 C. Michailides & J. Gaspar
<i>Coffee-break (15h30-16h00)</i>			
<i>Session 1.8 (16h00-17h30)</i> Ship Hydrodynamics – Manoeuvring 1 L. Moreira & L.P. Perera	<i>Session 2.8 (16h00-17h30)</i> Ship Structures – Fatigue X. Martinez & X. Jiang	<i>Session 3.8 (16h00-17h30)</i> Maritime Transportation and Ports 2 R.C. Botter & Ch. Kontoras	<i>Session 4.8 (16h00-17h30)</i> Renewable Energy 6 F. Arena & D. Karmakar
<b>20:00 h - Conference Dinner</b>			

<b>Wednesday, 18th November 2020</b>			
<b>Registration (from 8h30 onwards)</b>			
<i>Session 1.9 (9h30-10h30)</i> Ship Hydrodynamics – Manoeuvring 2 Xueqian Zhou & L.P. Perera	<i>Session 2.9 (9h00-10h30)</i> Ship Structures 4 C. Rizzo & L. Sutherland	<i>Session 3.9 (9h00-10h30)</i> Maritime Transportation and Ports 3 H. Haralambides & L. Garcia Alonso	<i>Session 4.9 (9h00-10h30)</i> Fishing T. Raid & A. Campos
<b>Coffee-break (10h30-11h00)</b>			
<i>Session 1.10 (11h00-12h30)</i> Ship Hydrodynamics – Manoeuvring 3 M. Viviani & T. Iseki	<i>Session 2.10 (11h00-12h30)</i> Ship Structures – Composites N. Tsouvalis & N. Zhong Chen	<i>Session 3.10 (11h00-12h30)</i> Maritime Transportation and Ports 4 E. Boulougouris & T. Santos	<i>Session 4.10 (11h00-12h30)</i> Aquaculture H. Moe Føre & M. Chen Ong
<b>Lunch (12h30-14h00)</b>			
<i>Session 1.11 (14h00-15h30)</i> Ship Hydrodynamics – Manoeuvring in Waves S. Sutulo & R. Datta	<i>Session 2.11 (14h00-15h30)</i> Structures – Pipelines 1 X. Jiang & N. Zhong Chen	<i>Session 3.11 (14h00-15h30)</i> Maritime Traffic 1 P. Kujala & M. Ramos Martins	<i>Session 4.11 (14h00-15h30)</i> Coastal Structures 1 S. Estefen & S. Mohapatra
<b>Coffee-break (15h30-16h00)</b>			
<i>Session 1.12 (16h00-17h30)</i> Ship Hydrodynamics – Seakeeping 1 S. Hirdaris & S. Rajendran	<i>Session 2.12 (16h00-17h30)</i> Structures – Pipelines 2 S. Estefen & B. Leira	<i>Session 3.12 (16h00-17h30)</i> Maritime Traffic 2 J. Montewka & F. Goerlandt	<i>Session 4.12 (16h00-17h30)</i> Coastal Structures 2 J.A. Santos & F. Taveira Pinto
<b>Thursday, 19th November 2020</b>			
<b>Registration (from 8h30 onwards)</b>			
<i>Session 1.13 (9h00-10h30)</i> Ship Hydrodynamics – Seakeeping 2 E. Begovic & J. Romanoff	<i>Session 2.13 (9h00-10h30)</i> Shipbuilding and Ship Repair 1 M. Fujikubo & J. Ringsberg	<i>Session 3.13 (9h00-10h30)</i> Maritime Traffic 3 X. Yan & Â. Teixeira	<i>Session 4.13 (9h00-10h30)</i> Safety 1 Z. Yang & J. Zhang
<b>Coffee-break (10h30-11h00)</b>			
<i>Session 1.14 (11h00-12h30)</i> Ship Hydrodynamics – Slamming P. Stansby & K. Iijima	<i>Session 2.14 (11h00-12h30)</i> Shipbuilding and Ship Repair 2 P. Georgiev & L. Domnisoru	<i>Session 3.14 (11h00-12h30)</i> Ship Machinery 1 M. Figari & S. Ergin	<i>Session 4.14 (11h00-12h30)</i> Safety 2 B. Wu & P. van Gelder
<b>Lunch (12h30-14h00)</b>			
<i>Session 1.15 (14h00-15h30)</i> Ship Hydrodynamics - Mooring A. Souto-Iglesias & Sh. Wang	<i>Session 2.15 (14h00-15h30)</i> Shipbuilding and Ship Repair 3 S. Garcia Gómez & J. Gordo	<i>Session 3.15 (14h00-15h30)</i> Ship Machinery 2 S. Ergin & M. Altosole	<i>Session 4.15 (14h00-15h30)</i> Safety 3 Â. Teixeira & H.N Dai
<b>Coffee-break (15h30-16h00)</b>			
		<i>Session 3.16 (16h00-17h30)</i> Ship Machinery 3 T. Leo Meno & M. Ventura	<i>Session 4.16 (16h00-17h30)</i> Safety 4 V. Diaz Casas & M. Mendes

## Wireless:

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**Monday, 16th November 2020**

**Time: 8:30 to 8:45 h**

**OPENING SESSION**

Welcome by Professor Carlos Guedes Soares and Eng. Pedro Ponte

**Time: 8:45 to 9:20 h**

**PLENARY SESSION**

**Forty years of teaching NAOE at IST and 25 years of CENTEC**

Professor Carlos Guedes Soares

**Time: 9:30 to 11:00 h**

**SESSION 1.1 -Hydrodynamics - CFD**

Numerical prediction of hydrodynamic coefficients of a submerged object with constant acceleration method

Gong Xiang, Shan Wang and C. Guedes Soares

CFD investigation of submerged geometry effect on wave Run-Up around a fixed, vertical monopile in regular head waves

M. Mohseni and C. Guedes Soares.

Numerical investigation of monochromatic waves propagation over a submerged bar

J. F.M. Gadelho and C. Guedes Soares.

**SESSION 2.1 - Ship Structures 1**

A case study on the impact of Lightship Weight (LWT) Distribution in the structural scantlings

A. Miranda

Proposal for a reliable definition of a lightship weight distribution curve at an early stage of design

A. Miranda

Review of digital twin of ships and offshore structures

B. Q. Chen, P. M. Videiro and C. Guedes Soares

## **SESSION 3.1 - Ship Design 1**

Second Generation Intact Stability criteria: Application of operational limitations and guidance to a megayacht unit

N. Petacco, P. Gualeni and G. Stio

An application of a multi-objective evolutionary strategy to the ship hull form optimization

Linqiang Lan, Yafeng Sun and Weilin Luo

A damage prediction model of oil tankers for design applications based on the regulations

H. Jafaryeganeh, C. L. Siow and C. Guedes Soares

## **SESSION 4.1 – Waves and Currents**

Autonomous Observing Systems in Fishing Vessels

A.M. Piecho-Santos, M. Hinojroza, T. Rosa and C. Guedes Soares

Surface circulation in the Eastern Central North Atlantic

J. Bettencourt and C. Guedes Soares

Modelling of the Surface Stokes drift in the Agulhas current system

S. Ponce de León, C. Guedes Soares and J. Johannessen

**Time: 11:30 to 13:00 h**

## **SESSION 1.2 - Ship Hydrodynamics CFD**

Comparative investigation on the hydrodynamic behavior of high-performance monohulls by CFD

J. Jiao, S. Huang and C. Chen

Comparison between model test and numerical simulations for a container ship

A.M. Chiroasca and C. Gasparotti

On the computation of the propulsive characteristics of a tanker

G. Tzabiras, H. Tserpes, S. Polyzos and D. Liarakapis

## **SESSION 2.2 - Ship Structures 2**

Accelerated large scale test set-up design in natural corrosion marine environment

K. Woloszyk and Y. Garbatov

Strength identification of ageing structures using shock pulse approach

A. Vitorino and Y. Garbatov

Strength analysis of container ship subjected to torsional loading

M. Bogdaniuk, M. Jablonski and K. Woloszyk

## **SESSION 3.2 - Ship Design 2**

Transforming Chinese ancient ship art and cultural features into modern yacht: a design DNA model of yacht localization design

D.T. Zhou, X.F. Yuan, Y. Wu and C.X. Pan

Cultural image for yacht appearance personalized design  
L.S. Ma and Y. Wu

The preliminary design of rubber mounted pillars for pleasure and passenger yachts  
G. Vergassola, D. Boote and L. Falcinelli.

### **SESSION 4.2 – Wave Modelling in Storms**

Distribution and characteristics of extreme waves generated by extratropical cyclones in the North Atlantic Ocean

C. B. Gramcianinov, R. M. Campos, C. Guedes Soares and R. de Camargo

Simulation of hurricane Lorenzo at the port of Madalena do Pico, Azores, by using the HIDRALERTA system

M.I. Santos, L. V. Pinheiro, C.J.E.M. Fortes, M.T. Reis, V. Serrazina, E.B. Azevedo , F. V. Reis and M. Salvador

Assessment of Hurricane Lorenzo metocean forecast

R. M. Campos, M. Gonçalves and C. Guedes Soares

**Time: 14:30 to 16:00 h**

### **SESSION 1.3 - Ship Hydrodynamics**

Effect of optimal thruster location on DP operability of an offshore vessel

F. Mauro, R. Nabergoj and J. Prpic-Oršić

Investigation of trim control devices on hydrodynamic characteristics of fast vessels

M. Pedisšić Buca and T. Prošinecki

Hydrofoil profile numerical analysis for low Reynolds number

P.A.P. Souza, P.I.D. Lameira, H.P. Picanco, H.B. Moraes and L.C.P. Campos Filho

### **SESSION 2.3 - Ship Structures 3**

Study on the dynamical structural response under ice load with different ice conditions

Shifeng Ding, Li Zhou, Chenkang Zhong, Jing Cao and Gu Yingjie

Investigation on the performance of an OC3-Hywind Spar-type floating wind turbine impact by an offshore service vessel

Y. Zhang and Z. Hu

An investigation on the overall stability of ring-stiffened cylindrical shell

WeiJun Xu, Xinyao Lv, Junjie Ruan, Chenfeng Li and Xueqian Zhou

### **SESSION 3.3 - Ship Design 3**

RIM driven propellers design using a simulation based design optimization approach

S. Gaggero



Design and application of propeller boss cap fins to ducted propellers  
M. Martinelli, D. Villa and S. Gaggero

Supportability and sustainability of warships: the Italian Navy approach  
A. Peisino and A. Dell'Isola

### **SESSION 4.3 - Renewable Energy 1**

Validation with satellite data of SWAN model for wave conditions at the Madeira archipelago  
D. Silva and C. Guedes Soares

Wave energy assessment in the São Roque do Pico Island for OWC installation  
G. Anastas, J. A. Santos, L. V. Pinheiro and C.J.M.E. Fortes

An assessment of the wave energy in the European seas based on ERA 5 reanalysis dataset  
L. Rusu

**Time: 16:30 to 18:00 h**

### **SESSION 1.4 - Ship Hydrodynamics - Resistance 1**

An experimental investigation on the resistance and added resistance of two series 60 models with block coefficient 0.6 and 0.7 respectively  
D.E. Liarokapis, G.P. Trachanas and G.D. Tzabiras

Predicting head wave resistance for a KVLCC2 model using OpenFOAM  
H. Islam and C. Guedes Soares

A review of FUNWAVE model applications in the propagation of waves generated by vessels  
G. O. Mattosinho , G.F. Maciel , F.O. Ferreira, J.A. Santos and C. J. Fortes

### **SESSION 2.4 - Ship Structures - Impact**

Response of steel stiffened plates under shock wave loadings  
Kun Liu, Li Ke and Jiaxia Wang

Numerical investigation on the impact tolerance of box beams under lateral loading (Oral Presentation Only)  
Wei Xu and C. Guedes Soares

Uncertainty analysis on the pseudo-shakedown phenomenon of rectangular plates subjected to dynamic pressure pulse  
Xu He and C. Guedes Soares

### **SESSION 3.4 - Ship Design 4**

Remarks about trends in Fast Ferry design  
M. J. Legaz and C. Guedes Soares

AR3 – A noise evaluation software for ships  
A.C.R. Troyman, K.W. Huang and L.A.V. Pinto

Airborne Noise Emissions from Marine Vessels: an analysis based on measurements in port  
L. Mocerino, F. Quaranta, M. Viscardi and E. Rizzuto

#### **SESSION 4.4 - Renewable Energy 2**

Assessment of the wave resource in the Azores coastal area  
M. Gonçalves and C. Guedes Soares

Evaluating trends and variability in Portuguese coastal wave energy potential using a 22 years high resolution hindcast  
M. Bernardino, D. Silva and C. Guedes Soares

Derivation of environmental contour by direct Monte Carlo techniques  
G. Clarindo and C. Guedes Soares

**Tuesday, 17th November 2020**

**Time: 9:00 to 10:30 h**

#### **SESSION 1.5 - Ship Hydrodynamics - Resistance 2**

Experimental and numerical study of added resistance in waves at low forward speeds  
H. Orihara , H. Yoshida and K. Takagishi

Investigation of the hydrodynamic properties of an inland container vessel  
H. Islam, J. Kan, J. Liu, X. Wang and C. Guedes Soares

Fast ferry design – a case for the Gulf of Cádiz  
M.J. Legaz, A. Querol, B. Fleches, M. Avalos and M.I Ibrahim

#### **SESSION 2.5 - Ship Structures – Ultimate Strength 1**

The effects of welding-induced residual stress on the buckling collapse behaviours of stiffened panels  
S. Li and S. Benson

Study on residual strength of stiffened panels with dent damage  
Kun Sun, Ling Zhu, Liang Xu and C. Guedes Soares

Enhancement of U-type stiffener on buckling strength of stiffened plate  
Gui-jie Shi and De-yu Wang

#### **SESSION 3.5 - Ship Design - Cruise ships 1**

Cruise color analysis system for interior color scheme under complicated ocean lighting conditions  
Jingguang He, Qingnan Li and Jinjin Wang

Comparative life cycle assessment of battery- and diesel engine-powered river cruise ship

M. Perčić, I. Ančić, N. Vladimir, A. Fan and Y. He  
Study of the design and styling of large cruise ships over the last 200 years  
Jiefeng Lv , Jing Chen and Jiankun Sun

### **SESSION 4.5 - Renewable Energy 3**

Comparison of renewables (onshore wind, offshore wind and conventional PV) for Bozcaada Island in Turkey  
A. E. Şentürk, E. Oğuz and D. D. Çiçek

Pre-planning for Black Sea offshore wind farms: a wind speed dataset for three Romanian coastal locations  
M. Burlouiu and E. Rusu

Levelized cost of energy of offshore floating wind turbines in different case scenarios of Madeira Islands  
S. Ramos, H. Diaz, D. Silva and C. Guedes Soares

**Time: 11:00 to 12:30 h**

### **SESSION 1.6 - Ship Performance 1**

Multiple evaluations of speed loss in rough sea voyages for 28,000- DWT bulk carrier  
K. Sasa, R. Uchiyama, C. Chen, D. Terada and J. Prpic-Oršić

Estimation of hull bending moment and shear force by artificial neural networks  
L. Moreira and C. Guedes Soares

The effect of spatial correlation of sea states on predicted extreme significant wave heights along ship sailing routes  
A. Mikulić, J. Parunov and M. Katalinić

### **SESSION 2.6 - Ship Structures – Ultimate Strength 2**

Effect of pressure on collapse behavior of stiffened panel  
L. Jiang and S. Zhang

Analysis of post-collapse behaviour of rectangular plate employing roof mode plastic solutions  
M. Tekgoz and Y. Garbatov

Experimental study on axial compression of misaligned pillars in large passenger ship superstructure  
Weiguo Wu, Pengliang Ren, Bin Liu, Jin Gan, Weiguo Tang and Yongshui Lin

### **SESSION 3.6 - Ship Design - Cruise ships 2**

Research on cruise space planning and design based on spatial syntax and correlation analysis  
Z. Li and W.B. Shao

Research on ventilation and particle flow pattern in cruise cabin design based on FLUENT  
Zhuo Li and Yafeng Yang

Analysis of Large Luxury Cruise Cabin Comfort Design  
Haolong Wu , Changxue Pan, Xiangshao Kong and Weiguo Wu

#### **SESSION 4.6 - Renewable Energy 4**

An integrated design approach for a self-float capable tension leg platform for wind energy  
E. Uzunoglu and C. Guedes Soares

Dynamic analysis of submerged TLP wind turbine combined with heaving wave energy converter  
Rony J.S, D. Karmakar and C. Guedes Soares

A review of mechanical analysis of submarine power cables  
Pan Fang, Xiaoli Jiang, Hans Hopman and Yong Bai

**Time: 14:00 to 15:30 h**

#### **SESSION 1.7 - Ship Performance 2**

Effects of GPV datasets on WRF modelling of ocean surface wind in rough seas  
Chen Chen, Kenji Sasa, Teruo Ohsawa and Daisuke Terada

Experimental study of ship resistance in broken ice  
J.E. Gutiérrez-Romero, S. Ruiz-Capel, J. Esteve-Pérez, B. Zamora-Parra and J.P. Luna-Abad

Augmenting ship propulsion in waves by flapping-foil thrusters  
K. Belibassakis

#### **SESSION 2.7 - Ship Structures – Ultimate Strength 3**

Ultimate strength of stiffened plates subjected to compressive load and spatially distributed mechanical properties  
K. Woloszyk and Y. Garbatov

Probabilistic evaluation of the computational uncertainty in ultimate ship hull strength prediction  
S. Li and S. Benson

Uncertainty of ultimate strength of ship hull with pits  
Xing Hua Shi, Haoran Shen, Jing Zhang and C. Guedes Soares

#### **SESSION 3.7 - Maritime Transportation and Ports 1**

Characterization of the cruise ship fleet calling in the port of Lisbon  
T. A. Santos, P. Martins and C. Guedes Soares

Hinterland corridor management initiatives in the EU and the US: the role of ports  
E. Sdoukopoulos and M. Boile

Competitive strategic position analysis of ports of the Iberian Peninsula hosting car-carrier traffic  
J. Esteve-Perez and J.E. Gutierrez-Romero

## **SESSION 4.7 - Renewable Energy 5**

A BEM for the performance of surge-type wave energy devices in variable bathymetry  
K. Belibassakis and A. Magkouris

Experimental analysis of wind thrust effects on the performance of a wave energy converter array adapted to a floating offshore platform

M. Kamarlouei, J.F. Gaspar, T. S. Hallak, F. Thiebaut, M. Calvário and C. Guedes Soares

Hydrodynamic performance of semi-submersible FOWT combined with point-absorber WECS

T. S. Hallak, D. Karmakar and C. Guedes Soares

**Time: 16:00 to 17:30 h**

## **SESSION 1.8 - Ship Hydrodynamics - Manoeuvring 1**

Local sensitivity analysis of a non-linear mathematical manoeuvring model

P. Pires da Silva, Serge Sutulo and C. Guedes Soares

Reliability analysis of crabbing manoeuvre

V. Ferrari, S. Sutulo, A. Teixeira and C. Guedes Soares

Modelling ship manoeuvrability using Recurrent Neural Networks

J. Araújo, L. Moreira and C. Guedes Soares

## **SESSION 2.8 - Ship Structures - Fatigue**

Fatigue behaviour and damage evolution of glass fiber reinforced composite material

A. K. Haldar, T. Gobikannan and A. Portela

Fatigue analysis of a naval composite structure

J. Jurado-Granados, X. Martinez, L. Barbu and D. di Capua

External surface crack growth in offshore steel pipes reinforced with CRS subjected to fatigue bending

Zongchen Li, Xiaoli Jiang, Hans Hopman, Ling Zhu and Zhiping Liu

## **SESSION 3.8 - Maritime Transportation and Ports 2**

External costs in short sea shipping based intermodal transport chains

M. M. Ramalho, T. A. Santos and C. Guedes Soares

A comparative life cycle assessment study on environmental performances between battery-powered and conventional marine vessels

H. Wang, E. Boulougouris, G. Theotokatos, A. Priftis, G. Shi and P. Zhou

Life cycle assessment of a Ro-Ro ship for operation phase

D. D. Çiçek, M. C. Sağır and E. Oğuz

## **SESSION 4.8 - Renewable Energy 6**

Numerical and experimental analyses of a conical point-absorber moving around a hinge  
T. S. Hallak, J. F. Gaspar, M. Kamarlouei and C. Guedes Soares

Experimental and numerical analysis of a spar platform subjected to regular waves  
K. Raed, K. Murali and C. Guedes Soares

Experimental and numerical analysis of a spar platform subjected to irregular waves  
K. Raed, K. Murali and C. Guedes Soares

**Wednesday, 18th November 2020**

**Time: 9:00 to 10:30 h**

## **SESSION 1.9 - Ship Hydrodynamics - Manoeuvring 2**

Global and local path-planning algorithm for marine autonomous surface ships including forecasting information  
M.A. Hinostroza and C. Guedes Soares

Instrumentation and data acquisition system for full-scale manoeuvrability tests on board of naval surface ships  
P. Pires da Silva, S. Sutulo, M.A. Hinostroza and C. Guedes Soares

Investigation of performance of the identification program based on evolutionary optimization algorithms  
S. Sutulo and C. Guedes Soares

## **SESSION 2.9 - Ship Structures 4**

Advanced Composite Materials Shafts Modelling  
E.P. Bilalis and N.G. Tsouvalis

Thermal load and residual strength of vessels under cabin fire  
Chenfeng Li, Kun Zhang, Ziyang Wei, Xueqian Zhou, Huilong Ren and Weijun Xu

Thermo-mechanical analysis of laminated composites exposed to fire. Application to the analysis of ship structures  
R. Pacheco, D. Di Capua, J. Garcia-Espinosa and O. Casals

## **SESSION 3.9 - Maritime Transportation and Ports 3**

Short sea shipping routes hinterland delimitation in the European Atlantic Area  
T. A. Santos, J. Escabelado, P. Martins and C. Guedes Soares

Revision of the waste handling plans in insular ports: Lessons from Las Palmas port  
A. Ruiz, A. Martínez-López and I. Pérez

An analysis of tug's escorting capability in low visibility conditions based on chase model: A case study of Qingdao port  
J.S. Dai, Z.X. Yu, T.F. Wang and Y. Wang

### **SESSION 4.9 - Fishing**

Definition of landing profiles in the Portuguese coastal multi-gear fleet  
A. Campos, G. Araújo, J. Parente, V. Henriques and P. Fonseca.

Reducing uncertainties in Baltic herring and sprat abundance estimates: Alternative approach to acoustic analyses  
A. E. Sepp, T. Raid, L. Saks, K. Hommik, T. Arula and B. O. Kaljuste.

The anchovy fishery by the Portuguese coastal seine fleet - landing and fleet characteristics  
J. Parente, V. Henriques and A. Campos

**Time: 11:00 to 12:30 h**

### **SESSION 1.10 - Ship Hydrodynamics - Manoeuvring 3**

Z-drive escort tug manoeuvrability modelling: from model-scale to full-scale validation  
B. Piaggio, M. Viviani, M. Martelli and M. Figari

A new estimation concept for hydrodynamic derivatives of ship manoeuvrability using machine learning toolkits  
L. Duan and T. Iseki

Optimal parameter estimation of empirical manoeuvring model using free-running ship tests  
A. Catarina Costa, Haitong Xu and C. Guedes Soares

### **SESSION 2.10 - Ship Structures – Composites**

Analytical approach for global fatigue of composite-hull vessels  
J.P. Tomy, L. Mouton, S. Paboef, A. Comer, A.K. Haldar and A. Portela

Study of a composite pressure hull for point absorber wave energy converter  
M. Calvário and C. Guedes Soares

FIBRESHIP: A great step forward in the design and construction of lightweight large-length vessels  
X. Martínez, J. Jurado, A. Jurado and J. García

### **SESSION 3.10 - Maritime Transportation and Ports 4**

Shortcomings in cybersecurity education for seafarers  
D. Heering, O. M. Maennel and A. N. Venables

Digitalization of Iberia Maritime Transport: Preparation of a survey on the as-is status  
D. Díaz Gutiérrez and P.-L. Sánchez-González

Topological surfaces based advanced data analytics to support industrial digitalization in shipping  
Lokukaluge P. Perera

### **SESSION 4.10 - Aquaculture**

A new approach to sustainable integrated cultures  
J. P. Garcês, H. Quental-Ferreira, D. Neto, M. Theriaga and P. Pousão-Ferreira.

Validation of tools for the analysis of offshore aquaculture installations  
T. A. Bernardo and C. Guedes Soares

Numerical Modelling of Full-scaled Aquaculture Cages under Uniform Flow  
Z. Liu, Y. Garbatov and C. Guedes Soares

**Time: 14:00 to 15:30 h**

### **SESSION 1.11 - Ship Hydrodynamics – Manoeuvring in Waves**

The variation in modal responses of a slamming-prone vessel during manoeuvres in open water  
J.C. Bossau, C.M. van Zijl and A. Bekker

Study on the manoeuvrability of a ship in regular waves based on a unified seakeeping and manoeuvring numerical model  
S. Parameesh, Praveen Kumar Ch and Suresh Rajendran

Preliminary review of shiphandling: comparison between the literatures on naval architecture versus nautical sciences  
H.O. Duarte, P.S.A. Michima, M.A.C. Carbajal and A.C.A. Oliveira

### **SESSION 2.11 - Structures – Pipelines 1**

Strength analysis of corroded pipelines in subsea operation condition and heated product transport  
M. P. Rangel, C. Guedes Soares and I. I. T. Riagusoff

Structural integrity of offshore pipelines considering buckling and fracture limit-states  
M. Kaveh and C. Guedes Soares

Review of the investigation of pipe collapse mechanism based on hyperbaric chambers in Tianjin University  
J.X. Yu, M.X. Han, Y. Yu, J.H. Duan and Z.Z. Sun

### **SESSION 3.11 - Maritime Traffic 1**

Behavior feature analysis on passenger ferry of Jiangsu Section in the Yangtze River based on AIS data  
M. Y. Cai, J. F. Zhang, B. Wu, W. L. Tian and C. Guedes Soares



A comparison of qualitative and quantitative models evaluating intelligent vessel safety  
J. Montewka, K. Wróbel, M. Mąka, Ł. Nozdrzykowski and P. Banaś

A spatial correlation analysis of ship near collisions off the coast of Portugal using AIS data  
H. Rong, A.P. Teixeira and C. Guedes Soares

### **SESSION 4.11 – Coastal Structures 1**

Experimental and numerical study of wave-induced ship motions and mooring loads of a tanker moored in Leixões port  
H.S. Abdelwahab, C. Guedes Soares, L. Pinheiro, C.J.E.M. Fortes and J.A. Santos

Modeling of navigability conditions of rivers in the Amazon and the occurrence of ENSO events  
H. M. Borges, L. C. P. Campos Filho, N. M. de Figueiredo, R. S. Saavedra and P.I.D. Lameira

Statistical analysis of the oil production profile of Campos' basin in Brazil  
L.M.R. Silva and C. Guedes Soares

**Time: 16:00 to 17:30 h**

### **SESSION 1.12 - Ship Hydrodynamics – Seakeeping 1**

Development of a three-dimensional frequency domain seakeeping code  
A. Abbasnia, S. Sutulo, B. Callewaert and C. Guedes Soares

Experimental and Numerical Investigations of Whipping Responses of a 20,000TEU Ultra Large Container Carrier  
Qiangong Feng, Liangjun Wen, Jiameng Wu, Shan Wang, and C. Guedes Soares

Experimental Study on the Wave Loads including Springing Response of a Very Large Crude Carrier in Regular Head Waves  
Y. Lin, N. Ma, D. Wang and X. Gu

### **SESSION 2.12 - Structures – Pipelines 2**

Finite element studies of the curvature effect on collapse behaviors of flexible risers subjected to wet collapse  
X. Li, X. Jiang and J.J. Hopman

Numerical study on the effect of initial deflection on ultimate strength of pipeline under external pressure  
Ruoxuan Li and C. Guedes Soares

Reliability assessment of corroded pipelines with different burst strength models  
U. Bhardwaj , A.P. Teixeira and C. Guedes Soares

## **SESSION 3.12 - Maritime Traffic 2**

Deep representation learning-based vessel trajectory clustering for situation awareness in ship navigation

B. Murray and L. Prasad Perera

Spatial-temporal analysis of ship traffic in Azores based on AIS data

H. Rong, A.P. Teixeira and C. Guedes Soares

Maneuvering and operational strategies using AIS data

A. Mujal-Colilles, C. Bagés and J. Fonollosa

## **SESSION 4.12 - Coastal Structures 2**

Optimizing the configuration of flow guide grid to reduce turbulence in a wave flume for coastal hydraulic research

D.M. Fellows, G. Nikolov and R. Kishev

Effect of vertical rigid wall on a moored submerged horizontal flexible porous membrane

Y. C. Guo, S. C. Mohapatra and C. Guedes Soares

The multi-objective optimisation of breakwaters using evolutionary approach

N. O. Nikitin, I. S. Polonskaia, A. V. Kalyuzhnaya and A. V. Boukhanovsky.

**Thursday, 19th November 2020**

**Time: 9:00 to 10:30 h**

## **SESSION 1.13 - Ship Hydrodynamics – Seakeeping 2**

The measurement and analysis of human comfort as a result of wave slamming on an ice-going vessel

M. Engelbrecht, A. Bekker and J. Muiyser

Improvement of ship hulls for comfort in passenger vessels

J. Gil Rosa, Shan Wang and C. Guedes Soares

Assessment of ship motion responses to multi-peaked spectral models

L. Z. M. Silva, Roberto Vettor and C. Guedes Soares

## **SESSION 2.13 - Shipbuilding and Ship Repair 1**

A Simplified Method to Simulate Residual Stresses for Structural Analysis

G. Teixeira and J. M. Gordo

Finite element welding simulation of construction assembly  
M. Hashemzadeh, Y. Garbatov and C. Guedes Soares

Optimum life-cycle maintenance of fatigue sensitive structures considering the random effect of ship repair  
Jianda Cheng, Yan Liu and Yiwen Lu

### **SESSION 3.13 - Maritime Traffic 3**

Ship traffic risk complexity modelling based on complex network theory  
Xuri Xin, Qing Yu, Xiaoli Wu and Kezhong Liu

A novel framework of real-time regional collision risk prediction based on RNN approach  
Dapei Liu, Yao Cai, Xin Wang, Zihao Liu and Zhengjiang Liu

Research on the evaluation method of a navigation plan based on the fuzzy comprehensive evaluation  
Yanfei Zhang and Jipan Qiao

### **SESSION 4.13 - Safety 1**

Data-driven cognitive modeling and semantic reasoning of ship behaviors  
Rongxin Song, Yuanqiao Wen, Liang Huang, Fan Zhang and Chunhui Zhou

2004 Post Tsunami Reconnaissance in Southern Thailand: The resilience and impact after 15 years  
T. Ornthammarath, A. Raby, P. Latcharote and W. Mortimer

Quantitative ecological risk assessment of oil spills near an island in the Atlantic  
P.G.S.C. Siqueira, H.O. Duarte, M.J.C. Moura, S.Q.P. Silva, L.F. Lara, M.A. Silva, M.C. Araujo and E.A.L. Droguett

**Time: 11:00 to 12:30 h**

### **SESSION 1.14 - Ship Hydrodynamics - Slamming**

An operational investigation of wave slamming detection  
J. C. Bossau and A. Bekker

On the water entry problem of 2D wedges and bow flare section  
Pravallika P, Aravind K Menon and Suresh Rajendran

Numerical Analysis of Water Impact of Spheres using mesh-free and mesh-based methods  
S. Wang, C. Guedes Soares, J. Gonzalez-Cao, J.M. Dominguez and M. Gómez-Gesteira

### **SESSION 2.14 - Shipbuilding and Ship Repair 2**

Outsourcing activities in a shipbuilding cluster: A study via MCDM  
P. I. D. Lameira, R. C. Botter, E.S. P. Loureiro, R. S. Saavedra and T. C. G. M. Filgueiras

Short sea shipping and shipbuilding capacity of the East Mediterranean and Black Sea regions  
T. Damyanliev, P. Georgiev, Y. Denev, L. Naydenov, Y. Garbatov and I. Atanasova

Economic feasibility analysis for the deployment of a ship repair yard in the Amazon  
3P.I.D. Lameira, R.C. Botter, T.C.G.M. Filgueiras, P.P. Souza, and H.B. Moraes

### **SESSION 3.14 – Ship Machinery 1**

Numerical modelling and analysis of the ambient conditions influence on the performance of a marine diesel engine

G. Benvenuto, U. Campora, M. Altosole and F. Balsamo

A review of the use of Biodiesel as a green fuel for diesel engines

M. Tadros, M. Ventura and C. Guedes Soares

A shaft line alignment verification by strain gauge method

L. A. R. Baptista and L. A.V. Pinto

### **SESSION 4.14 – Safety 2**

A risk analysis of autonomous vessels in complex urban waterways

O. A. Valdez Banda , P. Kujala, Y. Sapsathiarn, O. Mokkhavas, W. Punarai, C. Suvanjumrat and J. Priyadumkol

Statistical characterization of risk influencing factors in ship collision accidents

P. Antão, A.P. Teixeira and C. Guedes Soares

Performance-based leading risk indicators of safety barriers on liquefied natural gas carriers

M. Abdelmalek and C. Guedes Soares

**Time: 14:00 to 15:30 h**

### **SESSION 1.15 - Ship Hydrodynamics - Moorings**

Optimal mooring system deployment in line breakage condition

Mingxiao Liang, Shengwen Xu , Xuefeng Wang and Aibing Ding

Investigation of long-term extreme mooring tensions by fully coupled dynamic analysis

Sheng. Xu, C. Guedes Soares and Chunyan. Ji

Wind safety limits on ships docked with two different mooring systems

E. Díaz-Ruiz-Navamuel, A. Piris, C. A. Pérez-Labajos and M. A. Andrés

### **SESSION 2.15 - Shipbuilding and Ship Repair 3**

A measurement of shipbuilding productivity

P. Zuniga Roque and J.M. Gordo

Research on modular building system for accommodation cabins of large luxury cruise  
Xu Junhui, Pan Changxue, Jiang Jie and Huang Lei

Biofouling control in heat exchangers by statistical techniques  
D. Boullousa-Falces , M.A. Gomez-Solaetxe , S. Garcia , A. Trueba and D. Sanz

### **SESSION 3.15 - Ship Machinery 2**

New methodologies for the study of transport phenomena in ship's ballast water  
A. Amosano, P. Iodice, G. Langella, L. Mocerino and F. Quaranta

Sensitivity analysis of the steam Rankine cycle in marine applications.  
M. Tadros, M. Ventura and C. Guedes Soares

Analysis of ship performance data for the evaluation of marine engines emissions in ports  
M. Altosole, F. Balsamo, U. Campora, L. Mocerino, F. Quaranta and E. Rizzuto

### **SESSION 4.15 – Safety 3**

A FMEA for a floating offshore wind turbine considering costs of failures  
He Li and C. Guedes Soares

Reliability analysis of critical systems installed in ships based on degradation mechanisms  
J. Sobral and C. Guedes Soares

On UAV-assisted data acquisition for underwater IoT in aquaculture surveillance  
Qubeijian Wang, Hong-Ning Dai, Qiu Wang and Mahendra K. Shukla

**Time: 16:00 to 17:30 h**

### **SESSION 3.16 - Ship Machinery 3**

CO2 treatment in an autonomous underwater vehicle powered by a direct methanol fuel cell  
A. Villalba-Herreros, R. d'Amore-Domenech, R. Abad, T. J. Leo and E. Navarro

Auxiliary generator of a platform supply vessel based on fuel cell technology  
M. Acanfora, T. Coppola, E. Fasano and L. Micoli

Condition analysis on air conditioning cooling water pumps  
S. Lampreia, V. Vairinhos, V. Lobo and T. Morgado

### **SESSION 4.16 – Safety 4**

Virtual model of FiFi system for autonomous detection and response to failure  
S. Ferreno Gonzalez, V. Diaz Casas & M. Miguez Gonzalez and C. Garcia Sangabino

GIL breakdown fault location based on sound source recognition technology  
J. Tang, Q. Q. Wang, Z. Wang and Y. L. Li



# Notes

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# IMPORTANT INFORMATION:

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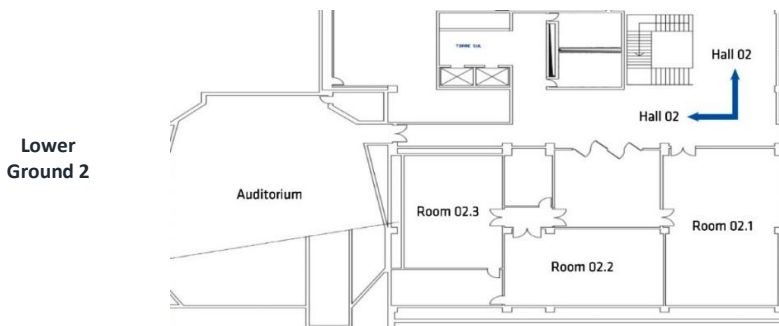
- The sessions with participants at IST **will run in Room 02.1 of the IST Congress Centre**, floor -02.
- The timetable is based on the **Time Zone Lisbon/London time**
- The **permanent use of facemasks** throughout the IST campus is compulsory.
- Groups of more than 6 persons are not allowed anywhere in the IST Campus (except in the classrooms and auditoriums, which have their own allowed capacity).

## Guidelines for presentations, questions and answers

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- ZOOM links will be sent in a separate document to all participants. A pre-registration in the sessions is mandatory.
- Each paper will have a timeslot of 30 minutes (20 minutes for the presentation + 10 minutes for Q&A).
- The participants that want to ask questions after the presentation should use the facility of ZOOM of “raise hand”, which can be found after clicking on “Participants” in the lower part of the zoom screen. This will allow the Chair to pass the word to each participant following the order of registering their interest to intervene. If the question is simple to be written, the participants may also use the chat possibility to write the question there.
- Test all technology (including camera/video, microphone, Wi-Fi, and screen sharing) before the conference.
- Make sure you follow the timetable set out in the programme and the order of presentations.
- Minimise any disturbance during the event by keeping all background noise to a minimum and by muting the microphone if you are not speaking.

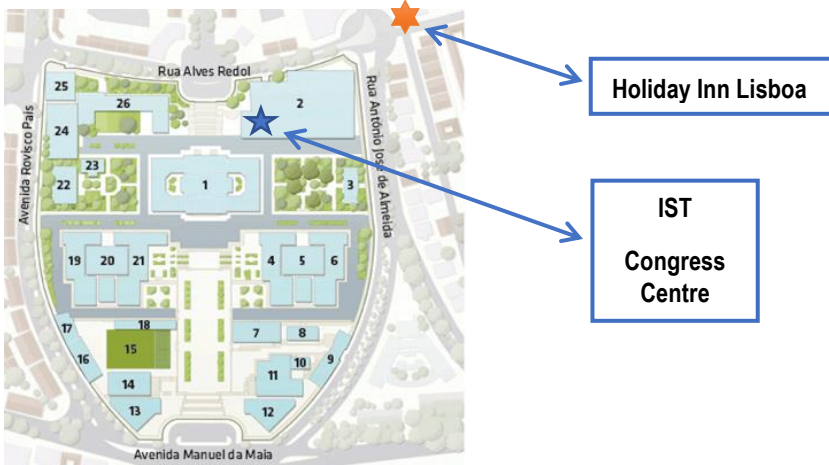
### Lower Ground of IST’s Congress Centre



# CONFERENCE VENUE

MARTECH2020 will be held at the Instituto Superior Técnico's Congress Centre at the Alameda Campus and via online transmission using the Zoom system

The MAP below shows the location of the IST's Congress Centre in the Campus, and the location of the Hotel Holiday Inn Lisboa where lunches will be served for the MARTECH registered participants.



MARTECH2020 will take place at **IST's Congress Centre** ★ located on the Lower Ground 2 Level, Room 02.1.

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