

7th International Conference on Marine Structures

MARSTRUCT 2019 PROGRAMME

6 - 8 May 2019

CENTRE FOR ADVANCED ACADEMIC STUDIES (CAAS)
DUBROVNIK, CROATIA



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Joško Parunov, Faculty of Mechanical Engineering and Naval Architecture,
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SCHEDULE AT A GLANCE

Centre for Advanced Academic Studies (CAAS), Dubrovnik

Sunday, 5 May 2019

Registration (CAAS - 18h00 - 20h00)

Welcome Reception (CAAS Atrium – 19h30)

Monday, 6 May 2019

Registration (CAAS - from 8h00 onwards)

Opening Session (9h00-9h30) - Conference Hall

Plenary Session I (9h30-10h20) - Conference Hall

An overview of ship hydroelasticity

*Ivo Senjanović & Nikola Vladimir, Faculty of Mechanical Engineering and Naval Architecture,
University of Zagreb*

Coffee Break (10h20-10h50)

Plenary Session II (10h50-12h30) - Conference Hall

Decarbonisation of Short Sea Shipping

Darko Bandula, Independent Expert of European Commission

**Structural design of expedition passenger vessel according to Polar Code requirements
- case study NB484**

Oliver Stanić & Stipe Lambaša, Shipbuilding Industry Split Inc.

Lunch (12h30-14h00) Restaurant Mimoza

Lecture Room 14h00 – 15h30

Conference Hall 14h00 – 15h30

Corrosion and weld-induced imperfections

Composite and hybrid structures I

Coffee Break (15h30-16h00)

Lecture Room 16h00 – 17h30

Conference Hall 16h00 – 17h30

Jack-ups

Composite and hybrid structures II

Tuesday, 7 May 2019

Registration (CAAS - from 8h00 onwards)

Lecture Room 09h00 – 10h30

Conference Hall 09h00 – 10h30

Waves and wave loads I

Structural analysis and optimization I

Coffee Break (10h30-11h00)

Lecture Room	11h00 – 12h30	Conference Hall	11h00 – 12h30
Waves and wave loads II		Structural analysis and optimization II	
Lunch (12h30-14h00) Restaurant Mimoza			
Lecture Room	14h00 – 15h30	Conference Hall	14h00 – 15h30
Fatigue analysis and design I		Structural dynamics and health monitoring I	
Coffee Break (15h30-16h00)			
Lecture Room	16h00 – 17h30	Conference Hall	16h00 – 17h30
Fatigue analysis and design II		Structural dynamics and health monitoring II	
20h00 - Conference Dinner at Restaurant Klarisa			

Wednesday, 8 May 2019			
Registration (CAAS - from 8h00 onwards)			
Lecture Room	09h00 – 10h30	Conference Hall	09h00 – 10h30
Buckling and ultimate strength I		Coastal Structures	
Coffee Break (10h30-11h00)			
Lecture Room	11h00 – 12h30	Conference Hall	11h00 – 12h30
Buckling and ultimate strength II		Model and full scale measurements	
Lunch (12h30-14h00) Restaurant Mimoza			
Lecture Room	14h00 – 15h30	Conference Hall	14h00 – 15h30
Crashworthiness I		Ice, environmental protection, LNG, FLNG I	
Coffee Break (15h30-16h00)			
Lecture Room	16h00 – 17h30	Conference Hall	16h00 – 17h30
Crashworthiness II		Ice, environmental protection, LNG, FLNG II	

Thursday, 9 May 2019	
Cultural and Sightseeing Tours (optional)	

Sessions in Alphabetical Order

Buckling and ultimate strength I -

Wednesday, 08/05/2019, 09h00 –
Conference Hall

Buckling and ultimate strength II -

Wednesday, 08/05/2019, 11h00 –
Conference Hall

Coastal Structures - Wednesday,
08/05/2019, 09h00 – Lecture Room

Corrosion and weld-induced imperfections -

Monday, 06/05/2019, 14h00 –
Lecture Room

Composite and hybrid structures I –

Monday, 06/05/2019, 14h00
– Conference Hall

Composite and hybrid structures II –

Monday, 06/05/2019, 16h00
– Conference Hall

Crashworthiness I – Wednesday,
08/05/2019, 14h00 – Lecture Room

Crashworthiness II – Wednesday,
08/05/2019, 16h00 – Lecture Room

Fatigue analysis and Design I – Tuesday,
07/05/2019, 14h00 – Lecture Room

Fatigue analysis and Design II – Tuesday,
07/05/2019, 16h00 – Lecture Room

Ice, environmental protection, LNG, FLNG I –

Wednesday, 08/05/2019, 14h00 –
Conference Hall

Ice, environmental protection, LNG, FLNG II -

Wednesday, 08/05/2019, 16h00 –
Conference Hall

Jack-ups – Monday,

06/05/2019, 16h00 – Lecture Room

Model and full scale measurements -

Wednesday, 08/05/2019, 11h00 –
Lecture Room

Plenary session I – Monday,

06/05/2019, 09h30 – Conference Hall

Plenary session II – Monday,

06/05/2019, 10h50 – Conference Hall

Structural analysis and optimization I

– Tuesday, 07/05/2019, 09h00 –
Conference Hall

Structural analysis and optimization II

– Tuesday, 07/05/2019, 11h00 –
Conference Hall

Structural dynamics and health monitoring I

– Tuesday, 07/05/2019, 14h00 –
Conference Hall

Structural dynamics and health monitoring II

– Tuesday, 07/05/2019, 16h00 –
Conference Hall

Wave and wave loads I – Tuesday,

07/05/2019, 09h00 – Lecture Room

Wave and wave loads II – Tuesday,

07/05/2019, 11h00 – Lecture Room

Detailed Programme

Monday, 6th May 2019

Time: 09h00 to 09h30

OPENING SESSION

Conference Hall

Chaired by: J. Parunov & C. Guedes Soares

Opening Addresses

Time: 09h30 to 10h20

PLENARY SESSION I

**Keynote Lectures
Hall**

Conference

Chaired by: J. Parunov & C. Guedes Soares

An overview of ship hydroelasticity
Ivo Senjanović & Nikola Vladimir, Faculty of Mechanical Engineering and Naval Architecture, University of Zagreb

Time: 10h50 to 12h30

PLENARY SESSION II

**Keynote Lectures
Hall**

Conference

Chaired by: J. Parunov & C. Guedes Soares

Decarbonisation of Short Sea Shipping
Darko Bandula, Independent Expert of European Commission

Structural design of expedition passenger vessel according to Polar Code requirements - case study NB484
Oliver Stanić & Stipe Lambaša, Shipbuilding Industry Split Inc.

Time: 14h00 to 15h30

**CORROSION AND WELD-INDUCED
IMPERFECTIONS**

Lecture Room

Chaired by: M. Collette & L. Zhu

Influence of weld-induced distortions on the stress magnification factor of a thin laser-hybrid welded ship deck panel

A. Niraula, M. Rautiainen, A. Niemelä, I. Lillemäe-Avi & H. Remes

Numerical study on weld-residual stress reduction of a stiffened steel plate using vibration
R. Pradhan, M.R. Sunny & A. Sarkar

A comparison of some multi-parameter distributions related to estimation of corrosion rate of aging bulk carriers
S. Ivošević, R. Meštrović & N. Kovač

Implementation of *in situ* corrosion measurements in structural analysis
Y. Wang, E.C. Ilman, N. Sohan Roy, A. Sobey, J. Wharton & R.A. Shenoi

Time: 14h00 to 15h30

COMPOSITE AND HYBRID STRUCTURES I

Conference Hall

Chaired by: J. Andrić & M. Gaiotti

FIBRESHIP project: Engineering, production and life cycle management for the complete construction of large length fibre-based ships
I. Garcia, A. Jurado & C. Garcia

Structural design of helicopter deck with hybrid materials and its joints with conventional steel
M. de Vicente, R. Pérez Fernández & M. Toman Fernández

Flexural behaviour prediction of a conventional composite-to-steel butt-joint of ships using layerwise HSDT
N. Kharghani & C. Guedes Soares

Time: 16h00 to 17h30

JACK-UPS

Lecture Room

Chaired by: Ning Ma & R. Sundaravadivelu

Managing risk for damaged offshore structures
E. Mat Soom, M.K. Abu Husain, N.I Mohd Zaki & N.U. Azman

System reliability calculation of jacket platforms including fatigue and extreme wave loading
H. Khalili, S. Oterkus, N. Barltrop, U. Bharadwaj & M. Tipping

Marine growth inspection for jacket structures by behaviour and sensitivity analysis
S.M.Y. Wan Alwi, M.K. Abu Husain & N.I. Mohd Zaki

Time: 16h00 to 17h30

COMPOSITE AND HYBRID STRUCTURES II
Conference Hall

Chaired by: S. Zhang & D. Dessi

Fibreglass repair behaviour as a function of the scarf angle

G.V.W. Rothbarth & R.A.Q. Pinto

Experimental and numerical damping behavior analyses of carbon/epoxy laminated plates including viscoelastic material

R. Mateu Pastor, H. Le Sourné, P. Cartraud & E. Le Gal La Salle

Dynamic buckling of composite mast panels of sail ships

M. Gaiotti, S. Ghelardi & C.M. Rizzo

Tuesday, 7th May 2019

Time: 09h00 to 10h30

WAVES AND WAVE LOADS I
Lecture Room

Chaired by: E. Mat Soom & T. Sugimoto

Extreme loads estimation using genetic algorithm approach

F. Mauro, L. Braidotti & J. Prpić-Oršić

A frequency domain approach for wide-band non-Gaussian process

H.-J. Kim & B.-S. Jang

Estimation of Volterra kernel coefficients of a nonlinear dynamic system

J.-H. Son & Y. Kim

Impact of weather source selection on time-and-place specific vessel response predictions

M.L. Schirmann, M.D. Collette & J.W. Gose

Time: 09h00 to 10h30

STRUCTURAL ANALYSIS & OPTIMIZATION I
Conference Hall

Chaired by: Y. Wang & E. Oterkus

Research on tank impact resistance mechanism and structure optimization

L. Zhang & P.D. Zhao

An intelligent design system for lift points arrangement and structural analysis

L. He, J. Cui & D. Wang

Structural integrity of fixed offshore platforms by incorporating wave-in-deck load

N.U. Azman, M.K. Abu Husain, N.I. Mohd Zaki & E. Mat Soom

Tanker structural design with improved hull structural safety

P. Prebeg, J. Andrić & S. Rudan

Time: 11h00 to 12h30

WAVES AND WAVE LOADS II
Lecture Room

Chaired by: B.-S. Jang & T. Sugimoto

Efficient methods for the prediction of non-Gaussian stochastic response of offshore structure

N.A. Mukhlas, N.I. Mohd Zaki, M.K. Abu Husain & G. Najafian

Study on design loads for fatigue strength assessments using Automatic Identification System (AIS) Data

N. Yamamoto, T. Sugimoto & K. Ishibashi

Offshore responses using an efficient time simulation regression procedure

S.Z.A. Syed Ahmad, M.K. Abu Husain, N.I. Mohd Zaki, M.H. Mohd & G. Najafian

Evaluation of extreme design wave loads for hull girder strength assessment

S. Ravinthrakumar, B.J. Leira, S. Haver, S. Ehlers and M. Klein

Time: 11h00 to 12h30

STRUCTURAL ANALYSIS & OPTIMIZATION II
Conference Hall

Chaired by: L. Zhu & M. Collette

Weight optimization of an enclosed stressed skin derrick designed for Arctic regions

J.W. Ringsberg & Z.Q. Hu

Automated structural optimisation of ships' midship section in concept design phase

A. Bayatfar, R. Warnotte & Ph. Rigo

A review of artificial intelligence applications in ship structures

A. Mikulić & J. Parunov

Improving multi-objective structural optimization with a novel constraint-handling method

F. Samanipour & J. Jelovica

Time: 14h00 to 15h30

FATIGUE ANALYSIS AND DESIGN I
Lecture Room

Chaired by: Z.Q. Hu & Sang Rai Cho

Optimum weight of the torsion box, in terms of fatigue life, of an ultra large container ship

A. Silva-Campillo, M.A. Herreros-Sierra & J.C. Suárez-Bermejo

Fatigue life as a factor in assessing warship design flexibility to support batch-building programs

D.M. Dwyer, T. Magoga, B.A. Morris & G. Condon

Models for design and fatigue analysis of dynamic power cables for wave energy converters

J.W. Ringsberg, A. Kuznecovs, S.H. Yang & E. Johnson

Time: 14h00 to 15h30

STRUCTURAL DYNAMICS AND HEALTH MONITORING I
Conference Hall

Chaired by: A. Kefal & J. Jelovica

Study on compound vibration isolation technology in ship foundation structure

S.Y. Wang, J.X. Yue, X.B. Li, W.J. Tu & L. Chen

Study on anti-explosion performance of double-layer structures subjected to far-field underwater explosion

W.B. Sun, X.B. Li & Z.Z. Ye

Application of Lagrangian energy approach to determine the response of isotropic circular plates subjected to air and underwater blasts

Y.P. Sone Oo, H. Le Sourne & O. Dorival

Hydro-plastic slamming

Z.L. Yu & J. Amdahl

Time: 16h00 to 17h30

FATIGUE ANALYSIS AND DESIGN II
Lecture Room

Chaired by: D.Y. Wang & J. Amdahl

Crack length measurement in the surface of vessel structures based on computer vision

K. Zhang & M.D. Collette

Validation and model updating of weld in finite element model of K-node structure using experimental data for fatigue analysis

M.L. Larsen, V. Arora, M. Lützen, R.R. Pedersen & E. Putnam

The fatigue assessment of offshore monopile structure considering corrosion

M.S. Azad, W. Punurai, C. Sinsabvarodom & P. Asavadorndeja

Effects of proof loading test on fatigue life of mooring chain links

X. Xue, N-Z. Chen & Y.C. Pu

Time: 16h00 to 17h30

STRUCTURAL DYNAMICS AND HEALTH MONITORING II
Conference Hall

Chaired by: M.K. Abu Husain & A. Sukhinov

Displacement and stress monitoring of a curved stiffened panel based on inverse finite element method

A. Kefal

Estimation of the deflection field over a ship structure model based on pointwise measurements

F. Saltari, D. Dessi, E. Faiella & F. Mastroddi

Vibration analysis in the design stage of the coastal patrol vessel

J. Parunov, M. Ćorak, Z. Šperanda, M. Bezovnik & M. Brlić

Wednesday, 8th May 2019

Time: 09h00 to 10h30

BUCKLING AND ULTIMATE STRENGTH I
Lecture Room

Chaired by: J.W. Ringsberg & J. Andrić

Examination of the dynamic effects on the hull girder ultimate strength of ultra large container ships

G. Jagite, H. Le Sourne, P. Cartraud, F. Bigot, Q. Derbanne & Š. Malenica

Residual ultimate strength analysis of stiffened panels exposed to fire

L.M. Zhang, H.X.Xue & W.Y.Tang

A cyclic progressive collapse method to predict the bending response of a ship hull girder

S. Li, Z.Q. Hu & S.D. Benson

Buckling behaviour of thin plated structures

S. Zhang, L. Jiang, J. Tong, L. Zhu & H. Zhou

Time: 09h00 to 10h30

COASTAL STRUCTURES
Conference Hall

Chaired by: A. Sukhinov & M.K. Abu Husain

Foundation for a caisson structure near an island in Indian Ocean

R. Sundaravadivelu, N. Saha, S. Sakthivel, S.M. Madhumathy & K. Anbazhagan

Retrofitting of berthing structure in a major port in East Coast of India

R. Sundaravadivelu, S. Sakthivel, R. Kalpana & V. Sasikumar

Stability of iron ore berth to handle deep draft vessels

R. Sundaravadivelu, S. Sakthivel & S.M. Madhumathy

Impact on dry dock extension due to deepening of floor slab

R. Sundaravadivelu, S. Sakthivel & K.S. Roja

Time: 11h00 to 12h30

BUCKLING AND ULTIMATE STRENGTH II
Lecture Room

Chaired by: E. Oterkus & Y. Wang

Residual strength of dented stiffened cylinders under combined loads

Q. Thang Do, T. Muttaqie, S.-H. Park, H. Kyoung Shin & S-R. Cho

Simulation and evaluation of ultimate strength based safety factor for titanium alloy spherical pressure hull

S. Yuan, Q. Chen & K. Ye

Residual strength analysis of spherical pressure hull with partial damage

X.B. Li, D.Y. Sun & H.R. Wu

Progressive collapse analyses of a stiffened box-girder under pure bending

Z. Lin, L. Zhu, J.H. Liu & C. Guedes Soares

Time: 11h00 to 12h30

MODEL AND FULL SCALE MEASUREMENTS
Conference Hall

Chaired by: D. Dessi & S. Zhang

Full scale measurements of the hydro-elastic behavior of a 13000 TEUs container ship

A. Andoniu, J. de Lauzon & V. Lamaison

Bending response of steel-concrete-steel sandwich beam with angled flat-plate shear connectors

M. Leekitwattana

Experimental testing of spray rails for the resistance reduction of planing crafts

M. Lakatos, T. Sahk, R. Kaarma, K. Tabri, M. Kõrgesaar & H. Andreasson

Numerical prediction and experimental investigation on hydroelastic loads of a very large container ship in waves

Y. Lin, N. Ma, D. Wang & X. Gu

Time: 14h00 to 15h30

**CRASHWORTHINESS I
Lecture Room**

Chaired by: J. Amdahl & D.Y. Wang

Numerical simulation for collision performance of subsea cable protector using fluid-structure interaction analysis

C.Y. Song, C.S. Shim & H.C. Song

A simplified method for assessing safety of ship collision event

H.-B. Ju & B.-S. Jang

A new technique to consider hydrostatic and hydrodynamic forces in case of ship collision

J. Choung, I. Kvan & K. Lee

Time: 14h00 to 15h30

**ICE, ENVIRONMENTAL PROTECTION,
LNG, FLNG I
Conference Hall**

Chaired by: Sang Rai Cho & E. Mat Soom

Peridynamic approach for modelling ice-structure interactions

B. Vazic, E. Oterkus & S. Oterkus

Development of compressive failure test and analysis method for ice

S.R. Cho, J. Jang, H.S. Kang & Y.H. Ko

An ice material model addressing the influence of strain rate, temperature, confining pressure and porosity

Y. Xu, Z.Q. Hu, J.W. Ringsberg, G. Chen & P. Kujala

Vibration study due to controlled trial blasting for rock dredging and berth dismantling

J.M. John, N. Saha, R. Sundaravadivelu, S.K. Modi & V.M.S.R. Murthy

Time: 16h00 to 17h30

**CRASHWORTHINESS II
Lecture Room**

Chaired by: J. Jelovica & A. Kefal

Effect of weld modelling on crashworthiness optimization

M. Kõrgesaar, J. Romanoff, L. St-Pierre & P. Varsta

Ship collision analysis with a floating offshore fish farm

Z.L. Yu, J. Amdahl & D. Kristiansen

Structural impact of circular buckling fenders on tanker hulls

A. Grm & M. Perkovič

A study on the displacement measurement of fire-structure experiment for verification of thermal-structural analysis

M. Suk Ki, B.J. Park, B. Park, K. Lee & S.-Y. Lee

Time: 16h00 to 17h30

**ICE, ENVIRONMENTAL PROTECTION,
LNG, FLNG II
Conference Hall**

Chaired by: R. Sundaravadivelu & Ning Ma

Coupled 3D wave and 2D bottom deposit transportation models for the prediction of harmful phenomena in coastal zone

A.I. Sukhinov, A.E. Chistyakov, S.V. Protsenko & V.V. Sidoryakina

Suspension and deposit transport models for bottom relief prediction

A.I. Sukhinov, A.E. Chistyakov, V.V. Sidoryakina & E.A. Protsenko

Impact of cryogenic spills on FLNG hulls

T. de Beer, B. Schrier & M. van den Berg

Thermal analysis for LNG tanks of floating storage regasification units

K.M. Doshi

CONFERENCE VENUE

The 7th International Conference on Marine Structures (MARSTRUCT 2019) will be held at Centre for Advanced Academic Studies (CAAS) situated in the heart of Dubrovnik, within only 3 minutes walking distance to the Old City.

The **Centre for Advanced Academic Studies (CAAS)** was founded by the University of Zagreb as a public academic institution for international scientific programmes and postgraduate studies with the aim of promoting academic activities in various fields of science and education in the form of courses, summer schools, conferences and other similar events.



Amongst the amenities of which CAAS boasts are lecture rooms and accommodation ideal for events such as the MARSTRUCT 2019 Conference.



Conference Hall



Lecture Room



Accommodation

If your registration package includes lunches, please be advised that the Conference lunches on the 3 days of the event will be served at the **Restaurant Mimoza**. It is within 2 minutes walking distance (180 metres) away from the conference location.

The Conference Dinner will be held at the **Restaurant Klarisa**. The restaurant is located in the heart of the Old City of Dubrovnik, near the Great Onofrio Fountain, in the former monastery of St. Claire which dates back to the 13th century. It is within 6 minutes walking distance (500 metres) away from the conference location.



CULTURAL TOURS

The three **Cultural Trips** organized for Conference participants and planned for Thursday, 9th May are: The Konavle Tour, The Mali Ston Bay Tour, and The Dubrovnik Old Town Tour, ideal to get to know Dubrovnik, because as George Bernard Shaw once wrote, “Those who seek paradise on earth should come to Dubrovnik.”



IMPORTANT CONTACTS

Conference Location	UNIVERSITY OF ZAGREB	Conference Dinner
Centre for Advanced Academic Studies (CAAS) Ul. don Frana Bulića 4, 20000, Dubrovnik Croatia Tel: +385 20 326 300	Faculty of Mechanical Engineering and Naval Architecture, Ivana Lučića 5, 10000 Zagreb, Croatia Tel: +385 1 6168 256 E-mail: marstruct2019@fsb.hr	Restaurant Klarisa Poljana Paska Miličevića 4, 20000, Dubrovnik Croatia Tel: +385 20 413 100
WIFI Access: 🚤 Username: CAAS + location dependant number 🚤 Password: 123caas#		Emergency Number: 112