

PROGRAM OF THE INTERNATIONAL CONFERENCE PAAMES\AMEC2021

First day:

20 September, Saint-Petersburg State Marine Technical University (SMTU), Lotsmanskaya 10

Auditorium Б401

8:00-8:45 Registration of the delegates. Online connection.

08:45-09:30 Opening of the conference

Words of Greeting

Rector of SMTU

President of NTOS named after acad. A.N. Krylov

Vice-President of the United Shipbuilding Corporation

Chairman of the Committee for Science and Higher School

Chairman of the Committee for Industrial Policies and Innovation of Saint-Petersburg

Greetings of Member Societies of the PAAMES

ВНИМАНИЕ!!!

- (1) Organized within PAAMES-AMEC 2021 is a PAAMESAMEC2021 CHAT for questions-answers. Separate link to the CHAT will be sent to participants not later than one day prior to the Conference.
- (2) Due to the density of the program presenters are recommended to strictly comply with allocated time intervals
SMTU sessions – 15 minutes, ExpoForum sessions -20 minutes. **Recommended maximum number of slides is 10.**
- (3) **After allocated presentation time elapses, the word automatically passes to the next speaker**
- (4) To attend the second part of Marine Robotics session presentation offline at ExpoForum (21 September, зал H2) one needs to register using a link to be sent before 10 September, and have personal passport available for entrance control

PLENARY PRESENTATIONS

09:30-9:45 Project of deep modernization of Onezhskiy building and repair shipyard for development of a digital shipyard, *Turichin G.A., Kireev V.N., Berezovsky A.B., Trubetskoy N.K., SMTU- CRIST/SoyuzProyektVerf, Russia*

09:45-10:00 Transformational trends emerging in shipbuilding sector- a step towards environment protection and enhancing efficiencies, *S L Deshmukh, Aerospace & Defence SUN Group, India*

10:00-10:15 New materials for shipbuilding, *Oryshenko A.S., CRI "Prometey", Russia*

10:15-10:30 Legal, technical and organizational problems of autonomous navigation, *Gutsulyak V.N., Klyuev V.V., Pinsky A.S., University of Transport, Ministry of Transport of the RF, Center for promotion of autonomous navigation technologies, Marinet RUT*

10:30-10:45 What is modern theory of ship design and how it develops ?, *Gaikovich A.I., SMTU, Russia*

10:45-11:00 Feasibility Study of MASS in Beijing-Hangzhou Great Canal, *Stephen Y.K. LI, K.S. FUNG, Dept of Logistics and Maritime Studies, The Hong Kong Polytechnic University, Hong Kong Institute of Marine Technology, Hong Kong SAR, China*

11:00-11:15 Modern methods of mapping underwater relief, *Pleshkov A.Yu., Marine Innovations Ltd of Skolkovo Innovation Center, Russia*

11:15-11:30 Methodological approaches to decision making for provision of safety of the shelf oil & gas facilities on the basis of risk management concepts, *Valdman N.A., Krylov State Research Center, Russia*

11:30-11:45 Russian experience of organization of bottom dredging, *Chemodanov M.N., Nonius Engineering, Russia*

11:45-12:30 Coffee-break

12:30-12:45 New methods for determining design ice loading upon hulls of ice-breakers and ice-class transport ships. Modern Rules of the Russian Marine Register of Shipping, *Platonov V.V., Tryaskin V.N., SMTU-Krylov State Research Center, Russia*

12:45-13:00 Questions and discussion

ARCTIC TECHNOLOGIES

13:00-13:15 The future need of icebreakers on the changing climate and merchant fleet the northern Baltic Sea, *Pentti Kujala, Aalto University, Finland*

13:15-13:30 Systems for monitoring the condition of the hulls of ships and production platforms in conditions of freezing seas, *Timofeev O. Ya., SMTU, Russia*

13:30-13:45 The problem of icing of ship structures, *Rodionov A.A., Mudrik R.S., SMTU, Russia*

13:45-14:00 Screw propellers for ice-going ships of double action. Peculiarities of design, *Andryushin A.V., Voronin A.Yu., Shapkov E.V., Ryabushkin S.V., JSC "Central Research Institute of Marine Fleet", Russia*

14:00-14:15 Determination of operational loads on hulls of ice-breakers and ice-going ships. Operating hull strength assurance, *Alexandr V. Andryushin, Pavel S. Zuev, Alexander Yu., Voronin, Central Marine Research and Design Institute - AETC Central Marine Research and Design Institute, Russia "Sapphire"*

14:15-14:30 Ice loads on azimuth thrusters of ice ships and icebreakers, ensuring the strength of the fastening elements of azimuth thrusters to hull, *Alexandr V. Andryushin, Sergey S. Fedoseev, Sergey V. Gavrilov, Central Marine Research and Design Institute*

14:30-15:00 Questions and discussion

DESIGN, CONSTRUCTION, STRUCTURAL MECHANICS (Session 1)

15:00-15:15 Implementation and development of the RMRS system ODYSSEY for automation of control of ship hull structures for compliance with the Rules, *Kuteynikov M.A., Nikonov S.A., FAE «Russian maritime register of shipping », Russia*

15:15-15:30 On the development of competencies of the RS in LNG technologies, *Boyko M.S., Russian Maritime Register of Shipping, Russia*

15:30-15:45 Peculiarities of mega block composition of stationary platforms in the Caspian sea, *Rauf Karaev, Azerbaijan State University of Oil and Industry, Azerbaijan*

15:45-16:00 Peculiarities of design of LNG bunker ships, *Demeshko GF, Reutsky A.S., SMTU-CRIMF, Russia*

16:00-16:30 Discussion

Second day: 21 September 2021, Saint-Petersburg State Marine Technical University (SMTU), Lotsmanskaya 10

Auditorium B401

PLENARY PRESENTATION

08:00-08:15 Additive technologies in shipbuilding, *Turichin G.A., SMTU, Russia*

MARINE ROBOTICS (First part of the session: SMTU, Lotsmanskaya 10, Auditorium B401)

08:15-08:30 Using wave glider as a mobile gateway of underwater wireless sensor network , *Fedorova T.A., Ryzhov V.A., Safronov K.S., Semenov N.N., SMTU, Russia*

08:30-08:45 Simulation and analysis of smart decentralized modular robotic fish with undulatory motion and pectoral fins, *Saad Shahid, Hong Kong University, Hong Kong, China*

08:45-09:00 Peculiarities of control of electric energy supply for autonomous unmanned underwater vehicle, *Lyubov A. Martynova & N.K. Kisselev, JSC "Concern CRI "Electropribor", Russia*

09:00-09:15 AUV navigation with use of bathymetry, *Ma Teng, Harbin Engineering University, China*

09:15-09:30 Onboard emergency means of marine robotics and complexes of search& evacuation service, *Nikolay A. Gryaznov, the Institute of digital security, SMTU, Russia*

09:30-09:45 Main problems of landing of small-sized flying drones on undersized ships, *Podoplekin V.F., Sharov S.N., Tolmachev S.G., Solovyeva V.V., JSC "Concern "Granit-Electron", Russia*

09:45-10:00 Some peculiarities of use of complex electronic signals for sea surface monitoring and identification of detected objects , *Podoplekin Yu. F., Sharov S.N., Tolmachev S.G., Solovyova V.V., JSC «Concern «Granit-Electron», Russia*

10:00-10:15 An application for orientation and navigation system of AUVs, *Khutornaya EV, Gnevashev Ya. O. , SMTU, Russia*

10:15 -10:30 Results of full-size trials and computer modeling of noise immunity of hydroacoustic system for data transfer and positioning, *Tuzova AA, Shustov AS, Kuznetsov AG, SMTU, Russia*

10:30-10:45 Methodology of predicting residual resource for hull mechanical parts of AUVs with account of dynamic characteristics of the material., *Sycheva T.I., JSC «Concern “Morskoye podvodnoye oruzhie-Gydropribor», Russia*

10:45-11:00 Best practices of the development of underwater robots for training of marine engineers from senior classes of schools through PhD studies , *Chemodanov M.N., SMTU, Russia*

11:00-11:15 On necessity of the development of a Concept for employing of flying drones for information support of providing safety of maritime activity of Russia in the Arctic, *Ilyukhin V.N., Borisovsky A.A. NTOS named after acad. A.N. Krylov*

11:15-11:30 Experimental study of the influence of different factors upon sea going properties a wave glider, *Ryzhov V.A., Ovchinnikov K.D., Synishin A.A., SMTU, Russia*

11:30-11:45 Prospective renewable energy sources for underwater vehicles, *Kuznetsov D.I., Sergeev A.S., Vilovatykh A.P., Department of design and manufacturing of marine underwater vehicles and robots, SMTU, Russia*

11:45-12:30 Coffee break

12:30-12:45 Implementation of digital methods of forming excitation signals for phased antenna arrays, *Buyanov A.P., Markova L.V., JSC “Concern “Okeanpribor”, Russia*

12:45 Departure of the participants of Marine Robotics session at NEVA2021 (ExpoForum, Peterburgskoye shosse 64 k1 lit. A, Hall H2). Buses from SMTU address (Lotsmanskaya 10)

SHIP AND THE OCEAN ENERGY (SMTU, Auditorium B401)

12:45-13:00 Application of plasma assistance for internal combustion engine- Discharge phenomenon under high pressure ambient conditions, *Kaoru Yamaha, Kenzaburo Tsuzuki, Ichiro Asano, Tomohisa Dan, JIME, Kobe University (Faculty of Maritime Sciences), Japan*

13:00-13:15 Fuel Combustion Improvement by Emitted Plasma Assistance-Trial with Electrode Configurations and their Effects- ,
Kenzaburo Tsuzuki, Kaoru Yamana, Ichiro Asano, Tomohisa Dan, Faculty of Maritime Sciences, Kobe University, Japan

13:15-13:30 Development of Detailed Engine Model for Evaluation Ship Performance in Waves by a Self-Propulsion Model Test,
Oleksiy Bondarenko, Yasushi Kitagawa, National Maritime Research Institute (NMRI), Japan

13:30-13:45 Unsteady Flow Effects on Energy Saving Devices: CFD Approach, *Nikolay Kornev, University of Rostock, Germany*

13:45-14:00 Ships propelled by waves, *Rozhdestvensky K.V., Zin Min Htet, SMTU, Russia*

DESIGN, CONSTRUCTION, STRUCTURAL MECHANICS (Session 2)

14:00 -14:15 Analysis of collision response of ice mass and different shapes of ice with bow structure, *Ling Wang, Lei Huang, Xiang Jiang, Jiangsu University of Science and Technology, China*

14:15-14:30 Optimization of ship overlaps with stiffness control, *Rodionov A.A., Korshunov V.A., Ponomarev D.A., SMTU, Russia*

14:30-14:45 Parametric design of tanker frames based on the IACS general rules , *Plotnikov K.V., SMTU, Russia*

14:45-15:00 Study on crashworthiness of a cylindrical pressure shell, *Lin Wang, Xiang Jiang, Lei Huang, Jiangsu University of Science and Technology, China*

15:00-15:15 Modern and prospective electric drives for ship pipeline fittings, *Belov S.A., JSC "Machinebuilding plant "Armalit", Russia*

15:15-15:30 Features of the dynamic behavior of aluminum bronze for elements of ship fittings after laser surface treatment, *Kuzhetsov A.V., Savenkov G.G., Smakovsky M.S., JSC "Machinebuilding plant "Armalit", Russia*

15:30-15:45 Implementation of operational repairs in the system of service maintenance and repair of ship power plants, Turichin G.A., Kotov V.S., Barskov V.V., Nikiforov A.E., SMTU-VUNTS VMF “Naval Academy named after N.G. Kuznetsov”-St Petersburg Polytechnical University of Peter The Great.

15:45-16:15 Questions & Discussion

MARINE ROBOTICS (Second part of the session, NEVA2021, ExpoForum, Peterburgskoye shosse, 64 k1, litera A, Hall H2)

Moderator: Honored scientist of the RF, Professor *Kirill V. Rozhdestvensky*

14:30-14:40 Words of Greeting

14:40-15:00 Complex “Vityaz-D” for search-survey & scientific research in near bottom layer of the world ocean, *Dmitry O. Semenov, JSC “CDB MT “Rubin”, Russia*

15:00-15:20 Development of mobile underwater robotic platforms, *Oleg G. Vlassov, JSC “SPMBM “Malachite”, Russia*

15:20-15:40 Marine modular robotic complex with changeable useful load, *Sergey N. Surin, JSC “Science& Production Amalgamation “Avrora”, Russia*

15:40-16:00 A-navigation: Russia’s approach to autonomous navigation, *Alexander S. Pinsky, Center for promotion of autonomous navigation, MARINET RUT, Russia*

16:00-16:20 Creation of autonomous unmanned underwater vehicle of great autonomy based on a complex of innovative solutions, *Evgeny M. Appolonov & Sabit Kh. Umyarov, JSC “CDS “Lazurit”, Russia*

16:20-16:40 Adaptive Error Constraint Control Method for the AUV systems, *Yanchao Sun, Harbin Engineering University, China*

16:40-17:00 The group of rapid AUV “Penguin” as a module of the monitoring system for the interaction of short-term events at sea in the field of research “Earth and environment”, *Rudold Bannasch & Konstantin Kebkal, Evologics GmbH, Germany*

17:00-17:20 The concept of navigational support and control of a group of underwater robots, *Fedorov P.G., JSC “Marine Navigation Systems”, Россия*

17:20-18:00 Questions and discussion with participation of experts (see the list)

Ryzhov V.A., D. Sc., Professor & Chairman, Dept of Applied Mathematics and Mathematical Modeling, SMTU, Russia

Martynova L.A., D. Sc., Principal Researcher, JSC “Concern “CRI Electropribor”, Russia

Podoplekin Yu.F., D. Sc., First Deputy Director General, JSC “Concern “Granit-Electron”, Russia

Zanin V.A., Adviser to Director General of JSC “Science & Production Enterprise “Oceanos”, Russia

Kozhemyakin I.V., Head of the Division for Applied R & D, SMTU, Russia

Semenenko D.A., Head of design department, Energy Storage Systems, Moscow Institute of Physics & Technology, Russia

Setin A.I., Professor and Head of department of Marine information systems and technologies, SMTU, Russia

Kuznetsov D.I., Professor and Head of department for Design and production technology of marine underwater vehicles and robots, SMTU, Russia

Third day: 22 September 2021, Saint-Petersburg State Marine Technical University, Lotsmanskaya 10

07:00-09:00 International PAAMES\AMEC Standing Committee meeting (online, for the Committee members and invitees only)

THEORY OF SHIPS AND HYDRODYNAMICS

09:00-09:15 Validation of flow field measurement using water and refractive index matching method, *Hamada Tatsuya, Tsujimoto Masaru, National Maritime Research Institute (Japan), National Institute of Maritime, Port and Aviation Technology, Japan*

09:15-09:30 Parametric Rolling of a Large Cruise Ship in Irregular Beam Waves, *Hiroaki Koike, Naoya Umeda, Takashi Tsuji, Akihiko Matsuda, Osaka University, National Research Institute of Fisheries Engineering, Japan*

09:30-09:45 Measurement and estimation of added resistance in waves at low-speed, *Saori Yokota, Mariko Kuroda, Ryohei Fukasawa, Hiroki Ohba, Masaru Tsujimoto, National Maritime Research Institute (Japan), Japan*

09:45-10:00 Numerical Investigation on Loss of Symmetry of Ship Roll Motion in Beam Waves, *Masahiro Sakai, Atsuo Maki, Naoya Umeda, Graduate School of Engineering, Osaka University, Japan*

10:00-10:15 Numerical study on vibration and noise by cavitation of Delft Twist Hydrofoil, *Hong-Sik Hwang, Kwang-Jun Paik, Gisu Song, Inha University, Samsung Heavy Industry Co., Ltd, Korea*

10:15-10:30 Research on Numerical Prediction of Hydrodynamic Response Characteristics of Different Types of Moon Pools for Drilling Ship, *LING Hong-jie, Jiangsu University of Science and Technology, China*

10:30-10:45 Research of the reverse process of a ship equipped with alternative traditional propeller and propeller with skew blades, *Vishnevskii L.I., Luk D. Ch., SMTU, Krylov State Research Centre, Russia*

10:45-11:00 Determination of nonlinear forces of the second order due to diffraction and ship motions with use of 3D potential theory, *Semenova V. Yu. Albaev D.N., SMTU, Russia*

11:00-11:15 Parametrization of the ship propeller thrust under reverse regime, *Goncharov V.K., SMTU, Russia*

11:15-11:30 Simplified mathematical model of a steerable propeller with account of scale effect, *Yakovlev A.Yu., Thant Zin, SMTU, Russia*

11:30-11:45 Estimation of ship behavior in stormy seas, *Shaub P.A., Ylyashev AA , NTOS named after acad. A.N. Krylov, Russia*

11:45-12:30 Coffee-break

12:30-12:45 A Proximal Policy Optimization-Based Automatic Berthing System, *Dae-Soo Lee, Seungjae Lee, Hyun-Haw Kang, Ji-Su Lim, Division of Naval Architecture and Ocean Systems Engineering, Korea Maritime and Ocean University, Busan, Korea.*

12:45-13:00 Topological method for extraction of knowledge from empirical material for design with use of CAD system and methods of artificial intelligence, *Muraviev E.A., SMTU, Russia*

13:00-13:15 Numerical modeling of rowing propeller for a marine drone, *Chepurko S.I., Yakovlav A.Yu., SMTU*

13:15-15:15 Questions & Discussion over all presentations of PAAMES AMEC2021 Conference

15:15-15:45 Closing of the PAAMES\AMEC 2021 International conference