21st Numerical Towing Tank Symposium (NuTTS 2018)

Cortona, Italy 30 September - 2 October 2018

Editor:

Volker Bertram

ISBN: 978-1-5108-7526-5

Printed from e-media with permission by:

Curran Associates, Inc. 57 Morehouse Lane Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2018) by Numerical Towing Tank Symposium All rights reserved.

Printed by Curran Associates, Inc. (2019)

For permission requests, please contact Numerical Towing Tank Symposium at the address below.

Numerical Towing Tank Symposium c/o Volker Bertram 121 Erdkampsweg 22335 Hamburg, Germany

Additional copies of this publication are available from:

Curran Associates, Inc. 57 Morehouse Lane Red Hook, NY 12571 USA Phone: 845-758-0400

Fax: 845-758-2633

Email: curran@proceedings.com Web: www.proceedings.com

Index of Papers

Simon Beelen, Martijn van Rijsbergen Bubble screening in lifting flows I
Manuel Cerro, Hans Vreugdenhil, Alex Kruijswijk CFD analysis of performance new design bow thruster tunnel7
Antonio Coppedè, Stefano Gaggero, Giuliano Vernengo, Diego Villa Surrogate Model for Ship Resistance: A Sensitivity Analysis of Shape Deformation13
Griet Decorte, Jaak Monbaliu A Review on the Application of OpenFOAM's Mesh Motion Techniques to Wave-Structure Interaction Problems19
Toon Demeester, E. Harald van Brummeleny, Joris Degroote An Iterative Fitting Method for 2D Supercritical Steady Free Surface Flow25
Mahesh Dhone, Nikolai Kornev Tracking of Tip Vortices Arising from Marine Structures31
Pranav Doijode Sumanth, Stefan Hickel, Tom van Terwisga On the Design of Experiments for propellers - Getting to design variables that matter and design points that are important37
Luis Eça, Guilherme Vaz, Martin Hoekstra On the Role of Iterative Errors in Unsteady Flow Simulations43
Arash Eslamdoost, Jennie Andersson, Rickard Bensow Including Energy Equation for Analyzing Propulsor-Hull Interaction Effects49
Inno Gatin, Shengnan Liub, Nikola Vladimira, Hrvoje Jasaka Compressible Two-phase flow model with the Ghost Fluid Method for Marine Hydrodynamics55
Ebrahim Ghahramani, Rickard Bensow Numerical study of cavitating flow around a cylindrical bluff body61
John Martin K. Godø, Jarle V. Kramer, Sverre Steen (NTNU), Luca Savio (SINTEF Ocean) Unsteady forces on hydrofoil vessels in waves - validation of a dynamic lifting line using CFD67
Nobuhiro Hasuike, Kohei Himei Cavitation simulation on composite marine propellers73
Adam Higgens, Philipp Joseph, Stephen Turnock Improvements in the Methodology for Identifying Noise Sources in Ducted Marine Propellers78
Qiu Jin, Dominic Hudson, Pandeli Temarel Simulation of Non-breaking and Breaking Waves with OpenFOAM83
Maarten Klapwijk, Thomas Lloyd, Guilherme Vaz, Tom van Terwisga Channel flow at $Re_{\tau} = 395$: LES is more (turbulent than PANS)89
Jarle V. Kramer, John Martin K. Godø, Sverre Steen Hydrofoil simulations – non-linear lifting line vs CFD95

Benoît LeBlanc, Hamn-Ching Cheny, Christiaan Klaijz Evaluation of a Coupled Level Set and Volume of Fluid Method for Unstructured Grids101
Sebastien Lemaire, Guilherme Vaz, Stephen Turnock Implementation and Verification of an Explicit Overset Grid Method107
Rui Lopes, Luis Eça, Guilherme Vaz Assessment of RANS Transition Models113
Stefano Lovato, Geert Keetels, Guilherme Vaz, Serge Toxopeus Verification of a CFD code for laminar viscoplastic fluid flow119
Nicholas McCaw, Stephen Turnock, William Batten An Investigation of the Vortex Shedding Frequency and Natural Frequency of a Ship Propeller125
João Muralha, Luis Eça, Christiaan Klaijy Application of the SIMPLE Algorithm to a Manufactured Subsonic Flow131
Carlo Negrato, Tom van Terwisga, Rickard Bensow Numerical study of hull pressures induced by a cavitating propeller137
Milovan Perić On the Estimation of Discretization and Modeling Errors and their Interaction140
Robinson Perić, Moustafa Abdel-Maksoud Influence of Choice of Boundary Treatment for 3D Flow Simulations with Free-Surface Waves146
Gem Rotte, Florian Charruault, Maarten Kerkvliet, Tom van Terwisga An Investigation on the Set-up of Air Cavity Simulations using a Scale Resolving Method152
Simone Saettone, Bhushan Taskar, Pelle Bo Regener, Poul Andersen Unsteady propeller forces and hull pressure pulses in waves158
Yuki Saito, Takanori Hino Development of Propeller Shape Optimization System Using CFD Analysis164
Nobuaki Sakamoto, Kunihide Ohashi Implementation of THINC-type VoF Advection Scheme on Structured FVM Solver170
Lars-Uve Schrader, Jan-Patrick Voß, Erik Leenders, John Nicholson Aerodynamics of Britain's new polar research ship176
Keun Woo Shin Simplified CFD Approach for Simulating Propeller Flows in Ship Wake Fields182
Simon Törnros, Olof Klerebrant Klasson Demonstration of Propeller Blade Optimization using BEM and CFD188
Arthur E.P. Veldman, Henk Seubers, Matin Hosseini Zahraei, Peter van der Plas, Peter Wellens Strong quasi-simultaneous coupling for fluid-structure interaction in offshore applications194
Kevin Vidal, Benoit Mallol, Charles Hirsch Weighted trade-off optimization of a self-propelled passenger ferry using efficient design space analysis techniques and adaptive grid refinement200

JeroenWackers, Charles-Edouard Jeanson, Patrick Queutey, Michel Visonneau, Riccardo Pellegrini,

Hull shape optimisation using multi-fidelity metamodels and adaptive grid refinement206

Andrea Serani, Matteo Diez

Michał Wawrzusiszyn, Marek Kraskowski, Przemysław Król, Tomasz Bugalski Experimental and Numerical Hydrodynamic Analysis of Propulsion Factors On R/V Nawigator XXI with a Pre-Swirl Stator Device212