



WCCM XI - ECCM V - ECFD VI
BARCELONA 2014

11th. World Congress on Computational Mechanics (WCCM XI)

20 – 25 July 2014 - Barcelona, Spain

5th. European Conference on Computational Mechanics (ECCM V)

6th. European Conference on Computational Fluid Dynamics (ECFD VI)

All Sessions and Papers

Subject to changes. This version is updated according to the last-minute information.

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Monday, July 21st

21/07/2014 08:30 - 10:30
Opening Ceremony

OS

Room: Auditorium

Chair: Eugenio Oñate

[The emergence of predictive computational mechanics](#)
[J. Tinsley Oden](#)

10:30 - 11:00
Coffee Break

11:00 - 13:00
TECHNICAL SESSIONS

21/07/2014 11:00 - 13:00

Meshless and Related Methods, a Minisymposium Dedicated to Celebrate the 80th Birthday of Professor Janusz Orkisz I
Minisymposium organized by Sergio Idelsohn, Pierre Villon, G.R. Liu, Paulo M. Pimenta and Suvranu De

MS114A

Room: Mare Nostrum A

Chair: Sergio R. Idelsohn

CoChair: Pierre Villon

Meshless Finite Difference method - State of the art (Keynote Lecture)

[Janusz Orkisz](#), Irena Jaworska, Jacek Magiera, Sławomir Milewski and Michał Pazdanowski

[On some aspects of a posteriori error estimation in the multipoint meshless FDM](#)



[Irena Jaworska](#) and Janusz Orkisz

[A face-based smoothed finite element method for hyperelastic models and tissue growth](#)



[Tuan M. Duong](#) and Manfred Staat

[Meshfree volume-averaged nodal projection methods for incompressible media problems](#)

[Alejandro Ortiz-Bernardin](#), Jack S. Hale and Christian J. Cyron

[Meshless method for 3D models with free form surfaces](#)

CFD modelling of a Beta-type sailing machine



Augusto Della Torre, Andrea Guzzetti, Gianluca Montenegro, Tarcisio Cerri, Angelo Onorati and Fethi Aloui

Open water computations of a marine propeller using OpenFOAM



Tuomas Turunen, Timo Siikonen, Johan Lundberg and Rickard Bensow

Tidal Turbine Modelling with OpenFOAM - Towards a Tidal Array

Gavin Tabor, Matthew Berry, Mulalem Gebreslassie and Michael Belmont

Modelling effects of freestream turbulence on dynamic stall of a pitching airfoil

Zheng-Tong Xie and Yusik Kim

Internal twist drill coolant channel modelling using computational fluid dynamics

Adam Johns, Robert W. Hewson, Eleanor Merson, Jonathan Summers and Harvey Thompson

A conservative level set method for interface capturing in two-phase flows

Vuko Vukcevic and Hrvoje Jasak

25/07/2014 09:00 - 11:00

Structure-preserving and Polyhedral Discretizations III

Structure-Preserving Methods for Fluids Session

Minisymposium organized by Lourenco Beirao da Veiga, Annalisa Buffa, Alexandre Ern, John A. Evans, Marc Gerritsma, Gianmarco Manzini and Giancarlo Sangalli

MS204C

Room: Yasmin B

Chair: Marc Gerritsma

Structure-preserving discretization of continuum theories

Dmitry Pavlov

A compatible discretization approach for the incompressible Euler equations

Andrea Natale and Marc Gerritsma

A vorticity, enstrophy, mass and energy conserving discretization for incompressible Euler equations

Pedro Pinto Rebelo, Artur Palha and Marc Gerritsma

Structure-preserving formulation of a convected Maxwell fluid

Kennet Olesen, Bo Gervang and Marc Gerritsma

Structure-preserving isogeometric discretizations for incompressible magnetohydrodynamics

John A. Evans

A finite element exterior calculus framework for the rotating shallow water equations

Colin Cotter, John Thuburn, Jemma Shipton and Andrew T.T. McRae

25/07/2014 09:00 - 11:00

Algorithmic Aspects of High-performance Computing for Mechanics and Physics IV

Minisymposium organized by Santiago Badia, Victor Calo and Javier Principe

MS172D

Room: Yasmin C

Chair: Javier Principe

Parallel adaptive-multilevel BDDC

Jakub Šístek, Bedřich Sousedík and Jan Mandel

A highly scalable implementation of balancing domain decomposition by constraints

Javier Principe, Santiago Badia and Alberto F. Martín

Comparing parallel technologies based on GPU and CPU in numerically solving single phase flow problems



[Eduy O. Dominguez](#), [Eduy O. Dominguez](#), [Eduy O. Dominguez](#), [Eduy O. Dominguez](#) and [Eduy O. Dominguez](#)

[Hyperbolic kinetic consistent 3D MHD for high performance parallel computing](#)

[Boris Chetverushkin](#), [Nicola D'Ascenzo](#) and [Valeri Saveliev](#)

[Program complex for low compressible flows simulation on GPU-based computer systems](#)

[Alexander A. Davydov](#) and [Evgeny V. Shilnikov](#)

25/07/2014 09:00 - 11:00

Nonsmooth Dynamics and Vibrations

Minisymposium organized by [Mathias Legrand](#) and [Vincent Acary](#)

MS154A

Room: Sala A

Chair: [Mathias Legrand](#)

[A comparison between different approaches to model multibody systems with contact](#)

[Mohammad Jalali Mashayekhi](#) and [József Kovecses](#)

[A Nitsche finite element method for dynamic contact](#)

[Franz Chouly](#), [Patrick Hild](#) and [Yves Renard](#)

[Nonlinear modes for a discrete mechanical system with rigid contact](#)

[Sokly Heng](#), [Stéphane Junca](#) and [Mathias Legrand](#)

[A discrete variational approach to non-smooth dynamics and optimal control](#)

[Sigrid Leyendecker](#), [Michael W. Koch](#), [Maik Ringkamp](#) and [Sina Ober-Blöbaum](#)

[Periodic motions of coupled impact oscillators](#)

[Vincent Acary](#), [Guillaume James](#) and [Franck Pérignon](#)

[Timestepping schemes based on Discontinuous Galerkin methods](#)

[Thorsten Schindler](#)

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Advanced Approaches for Shape Optimization II

Minisymposium organized by [Fabian Duddeck](#), [Kai-Uwe Bletzinger](#) and [Jens-Dominik Müller](#)

MS020B

Room: Sala B1

Chair: [Fabian Duddeck](#)

[Aerofoil inviscid drag minimization by constrained global optimization](#)

[Daniel J. Poole](#), [Christian B. Allen](#) and [Thomas C. S. Rendall](#)



[Implementation and numerical stabilisation of adjoint flow and turbulence model in OpenFOAM](#)

[Hrvoje Jasak](#), [Mirza Popovac](#) and [Henrik Rusche](#)

[Transition-oriented shape optimization for laminar flows](#)

[Christophe Hennekinne](#) and [Matthew P. Juniper](#)

[Implementation of the SIQP method, and its application to optimization of a cascade airfoil shape](#)

[Yasuyoshi Horibata](#)

[Adjoint optimization of a coolant pump impeller](#)

[Sabine Baumbach](#)



[Peculiarities of computer designing of the rotors with variable parameters in dynamics of various purposes](#)

[Raul Turmanidze](#)

25/07/2014 09:00 - 11:00

Impact and Crash Mechanics II

MS220B

Room: Sala B2