

Registration

Registration fees are expressed in Euro. Early registration applicable if payment is received before May 1st 2014

	Early	Late
Delegates:	490 €	540 €

Accommodation

The advanced school is scheduled at the end of the WCCM XI – ECCM V – ECFD VI Conference and will be held at the North Campus of the Universitat Politècnica de Catalunya - BarcelonaTech.

Participants of the advanced school can refer to hotels listed at the accommodation link of the conference website:

<http://www.wccm-eccm-ecfd2014.org>

School Secretariat

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An ECCAM advanced school on Isogeometric Analysis Fundamentals and Applications

July 25-27, 2014, Barcelona (Spain)

Under auspices of the ECCOMAS Committee for Computational and Applied Mathematics



<http://congress.cimne.com/igaschool2014>

Objectives

Isogeometric Analysis (IGA) has emerged over the past years as a powerful methodology for approximating solutions to boundary-value problems in science and engineering. In isogeometric analysis, the same spline functions that are used for the CAD representation of geometries are also used as a basis for constructing the numerical approximation. Isogeometric analysis therefore offers the prospect of bridging the gap between computational design and computational analysis, enabling direct computational analysis of CAD-engineered objects.

In addition to the aforementioned unification of computational analysis and design, the increased smoothness of spline approximations, relative to traditional finite elements, enables new numerical approximation techniques for, for instance, shells, cohesive-zone models of failure, Cahn-Hilliard type phase-field models, and free-boundary and shape-optimization problems.

Isogeometric Analysis: Fundamentals and Applications

The advanced school Isogeometric Analysis: Fundamentals and Applications aims to acquaint its participants with the fundamentals of isogeometric analysis and its applications in fluid and solid mechanics. The course provides an introduction into spline technology, its use in computer aided design and engineering, and the use of splines to construct approximations to boundary-value problems. Furthermore, the course addresses the application of isogeometric analysis to applications where the higher-order smoothness provided by spline functions is indispensable, viz., shell theory, cohesive-zone models in failure mechanics, and free-boundary problems. The course ends with a treatment of more advanced topics, such as adaptive refinement techniques in isogeometric analysis.

The advanced school is intended for graduate students and research professionals in computational engineering and applied mathematics. Although most of the material is self-contained, basic familiarity with differential equations and finite-element techniques is prerequisite.

Location

The advanced school will take place in Barcelona, in the premises of North Campus of the Universitat Politècnica de Catalunya - BarcelonaTech. on 25-27 July 2014 and it is scheduled at the end of the WCCM XI – ECCM V – ECFD VI Conference.

About Barcelona

Barcelona, the capital of the Catalonia, and the second largest city in Spain, is today one of the world's leading tourist, economic, trade fair/exhibitions and cultural-sports centres, and its influence in commerce, education, entertainment, media, fashion, science, and the arts all contribute to its status as one of the world's major global cities. The city combines modern and historic architecture in a unique way. It is the perfect city to relax in, stroll around and enjoy. Barcelona has its own way of life which makes it unique. The modernist movement of which Gaudí was the most prominent exponent left its mark on the city with magnificent buildings like the Sagrada Família, Casa Milà and Casa Batlló

Organizers

E. Harald van Brummelen, TU Eindhoven, The Netherlands

Thomas J.R. Hughes, University of Texas at Austin, USA

Trond Kvamsdal, NTNU Trondheim, Norway

Alessandro Reali, University of Pavia, Italy

Lecturers

Thomas J.R. Hughes, University of Texas at Austin, USA

Trond Kvamsdal, NTNU - Trondheim, Norway

Alessandro Reali, University of Pavia, Italy

Giancarlo Sangalli, University of Pavia, Italy

Michael Scott, Brigham Young University, USA

Clemens Verhoosel, TU Eindhoven, The Netherlands

Course Material

The course material consists of the book "Isogeometric Analysis" by J.A. Cottrell, T.J.R. Hughes, and Y. Bazilevs, (Wiley, 2009, ISBN: 978-0-470-74873-2), supplemented with auxiliary lecture notes. All course material will be provided free of charge to the participants at the start of the advanced school.