Seminari Padovani di Analisi Numerica SPAN18

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Abstract

The guest editors discuss the highlights of the meeting *Seminari Padovani di Analisi Numerica SPAN18* and briefly introduce the papers included in this special issue.

1 Report on the seminars

The workshop *Seminari Padovani di Analisi Numerica SPAN18* was held on May 3–4 2018 at the Department of Mathematics "Tullio Levi-Civita" of the University of Padova. The main scope of the meeting was to bring together people working on different aspects of numerical analysis, especially young researchers who have been in the Department of Mathematics "Tullio Levi-Civita" as PhD students or collaborating in research projects.

Throughout this two-day event many topics in different fields of numerical analysis have been discussed. Among them we mention: discretization of PDEs, RBF interpolation and approximation and numerical linear algebra. We had a total of 21 speakers and overall about 40 participants of which 15 from foreign countries.

The complete details of the workshop are available on the website:

<https://events.math.unipd.it/SPAN2018/>.

The invited lectures were given by:

- M. Farthing (US Army Corps of Engineers; United States), *Application of Entropy Viscosity Methods for Shallow Water Flows*,

- B. Haasdonk (University of Stuttgart; Germany), *Greedy Kernel-based Function Approximation by VKOGA: Analysis and Applications*,

- G. Rozza (SISSA, Trieste; Italy), *POD-Galerkin Reduced Basis Methods for Parametric Problems in Computational Fluid Dynamics: State of the Art and Perspectives*.

2 Introduction to the special issue

During the workshop the speakers were invited to submit contributions for a special volume of the Dolomites Research Notes on Approximation (DRNA). After peer-revision, we are pleased to announce that the following three papers have been included in the volume:

- *Hopf bifurcation analysis of the fast subsystem of a polynomial phantom burster model*, by I.M. Bulai and G. Pedersen. The work deals with mathematical models for the phantom bursting model. The authors analyse equilibrium points and provide numerical simulations.

- *Recent advancements in preconditioning techniques for large size linear systems suited for High Performance Computing*, by A. Franceschini, M. Ferronato, C. Janna and V. Magri. The paper focuses on Algebraic Multigrid preconditioners and develops new algorithms to accelerate the iterative solution of symmetric linear systems. Extensive numerical experiments, devoted to compare different approaches, are also presented.

- *Interpolation with uncoupled separable matrix-valued kernels*, by D. Wittwar, G. Santin and B. Haasdonk. This manuscript considers the problem of approximating vector-valued functions by using matrix-valued reproducing kernels. Theoretical analysis and numerical results show the benefits of the novel approach.
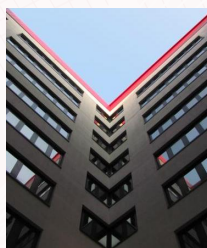
3 Acknowledgements

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Seminari Padovani di Analisi Numerica
SPAN2018

Dipartimento di Matematica *"Tullio Levi-Civita"*
Università degli studi di Padova
3-4th May 2018, room 1BC45

Contributed talks

Elena Bachini (Padova)
Matteo Briani (Antwerp)
Iulia Martina Bulai (Padova)
Cristina Campi (Padova)
Stefano Cipolla (Padova)
Gaspare Da Fies (Aberystwyth)
Monica Dessole (Padova)
Giacomo Elefante (Fribourg)
Enrico Facca (Padova)
Andrea Franceschini (Padova)
Marta Gatto (Padova)
Francesco Marchetti (Padova)
Ángeles Martínez (Padova)
Damiano Pasetto (Lausanne)
Emma Perracchione (Padova)
Federico Piazzon (Padova)
Davide Poggiali (Padova)
Gabriele Santin (Stuttgart)

Plenary Speakers

Matthew W. Farthing
(USA Army Washington D.C.)
Bernard Haasdonk
(Universität Stuttgart)
Gianluigi Rozza
(SISSA Trieste)

Supporting institutions
Dipartimento di Matematica "Tullio Levi-Civita"
CAA Padova-Verona research group
RITA Rete ITaliana di Approssimazione

Organizing Committee:
Enrico Facca, Ángeles Martínez, Emma Perracchione, Federico Piazzon
info: `https://events.math.unipd.it/SPAN2018/`

The leaflet of *Seminari Padovani di Analisi Numerica SPAN18*.