Institut für Numerische Simulation
Rheinische Friedrich-Wilhelms-Universität Bonn

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Sixth International Workshop

Meshfree Methods for Partial Differential Equations

First Announcement

Date:	October 4–6, 2011
Location:	Bonn, Germany
Sponsor:	Sonderforschungsbereich 611
Organizers:	Prof. Ivo Babuška (University of Texas, Austin, USA)
	Prof. Ted Belytschko (Northwestern University, USA)
	Prof. Jiun-Shyan Chen (University of California, Los Angeles, USA)
	Prof. Michael Griebel (Universität Bonn, Germany)
	Prof. Wing Kam Liu (Northwestern University, USA)
	Prof. Marc Alexander Schweitzer (Universität Stuttgart, Germany)
	Prof. Harry Yserentant (Technische Universität Berlin, Germany)
Contact:	`http://wissrech.ins.uni-bonn.de/meshfree`
	`mailto:meshfree@ins.uni-bonn.de`
Deadlines and Important Dates:	May 15, 2011 Early Registration and Abstract submission
	July 1, 2011 Confirmation and Program

The numerical treatment of partial differential equations with meshfree discretization techniques has been a very active research area in recent years. While the fundamental theory of meshfree methods has been developed and considerable advances of the various methods have been made, many challenges in the mathematical analysis and practical implementation of meshfree methods remain.

Meshfree methods, particle methods, and generalized finite element methods have undergone substantial development since the mid 1990s. The growing interest in these methods is in part due to the fact that they are very flexible numerical tools and can be interpreted in a number of ways. For instance, meshfree methods can be viewed as a natural extension of classical finite element and finite difference methods to scattered node configurations with no fixed connectivity. Furthermore, meshfree methods have some advantageous features which are especially attractive when dealing with multiscale phenomena: A-priori knowledge about particular local behavior of the solution can be introduced easily in the meshfree approximation space, and an enrichment of a coarse scale approximation with fine scale information is possible in a seamless fashion. The implementation of meshfree methods and their parallelization however requires special attention, for instance with respect to numerical integration.

This symposium aims to promote collaboration among engineers, mathematicians, and computer scientists and industrial researchers to address the development, mathematical analysis,

and application of meshfree and particle methods especially to multiscale phenomena. While contributions in all aspects of meshfree methods are invited, some of the key topics to be featured are

- Application of meshfree, generalized/extended finite element methods e.g. to
  - multiscale problems
  - problems with multiple discontinuities and singularities
  - problems in high-dimensions
- Coupling of meshfree methods, finite element methods, particle methods, and finite difference methods
- Parallel computation in meshfree methods
- Mathematical theory of meshfree, generalized finite element, and particle methods
- Fast and stable domain integration methods
- Enhanced treatment of boundary conditions
- Identification and characterization of problems where meshfree methods have clear advantage over classical approaches

The workshop program will consist of invited lectures, contributed papers and poster sessions.

If you are interested in contributing to this workshop, please submit an abstract of about 300 words (preferably in LaTeX format) by e-mail to the contact address `meshfree@ins.uni-bonn.de` by May 15, 2011.

The workshop will be held at the University Club:

Universitätsclub
Konviktstraße 9
D–53113 Bonn
Germany

of the University Bonn in downtown Bonn.

The conference fees are:

Participant	:	100,- €
Student	:	75,- €
Late Registration	:	150,- €

The conference fee includes the handbook of printed abstracts, admission to all sessions and receptions. The conference fees are to be paid in cash on site. There will a banquet as part of the social program of the workshop.

Workshop Organizers

Prof. Ivo Babuška
The University of Texas at Austin
Department of Aerospace Engineering
and Engineering Mechanics
105 W. Dean Keeton Street, SHC 328
Austin, TX 78712
USA
Telephone: +1-512-471-2156, 3312
Fax: +1-512-471-8694
email: `babuska@ices.utexas.edu`

Prof. Ted Belytschko
Department of Mechanical Engineering
Northwestern University
2145 N. Sheridan
Evanston, IL 60208-3111
USA
Telephone: +1-847-491-7270
Fax:+1-847-491-3915
email: `tedbelytschko@northwestern.edu`

Prof. Michael Griebel
Universität Bonn
Institut für Numerische Simulation
Wegelerstraße 6
D–53115 Bonn
Germany
Telephone: +49-228-733437
Fax: +49-228-737527
email: `griebel@ins.uni-bonn.de`

Prof. Antonio Huerta
Laboratori de Càlcul Numèric
Departament de Matemàtica Aplicada III
Universitat Politècnica de Catalunya
Jordi Girona 1
E-08034 Barcelona
Spain
Phone: +34-93-401-6916
Fax: +34-93-401-1825
email: `antonio.huerta@upc.es`

Prof. Wing Kam Liu
Northwestern University
Department of Mechanical Engineering
2145 Sheridan Rd.
Evanston, IL 60208-3111
USA
Telephone: +1-847-491-7074
Fax: +1-847-491-3915
email: `w-liu@northwestern.edu`

Prof. Harry Yserentant
Technische Universität Berlin
Institut für Mathematik
Straße des 17. Juni 136
D–10623 Berlin
Germany
Telephone: +49-30-314-29289
Fax: +49-30-314-29621
email: `yserentant@math.tu-berlin.de`

Prof. Marc Alexander Schweitzer
Universität Stuttgart
Institut für Parallele und Verteilte Systeme
Universitätsstr. 38
D–70569 Stuttgart
Germany
Telephone: +49-685-88465
Fax: +49-685-70413
email: `schweitzer@ipvs.uni-stuttgart.de`

Local Organizers

Dr. Christian Rieger
Universität Bonn
Institut für Numerische Simulation
Wegelerstraße 6
D–53115 Bonn
Germany
Telephone: +49-228-7360462
Fax: +49-228-737527
email: `rieger@ins.uni-bonn.de`