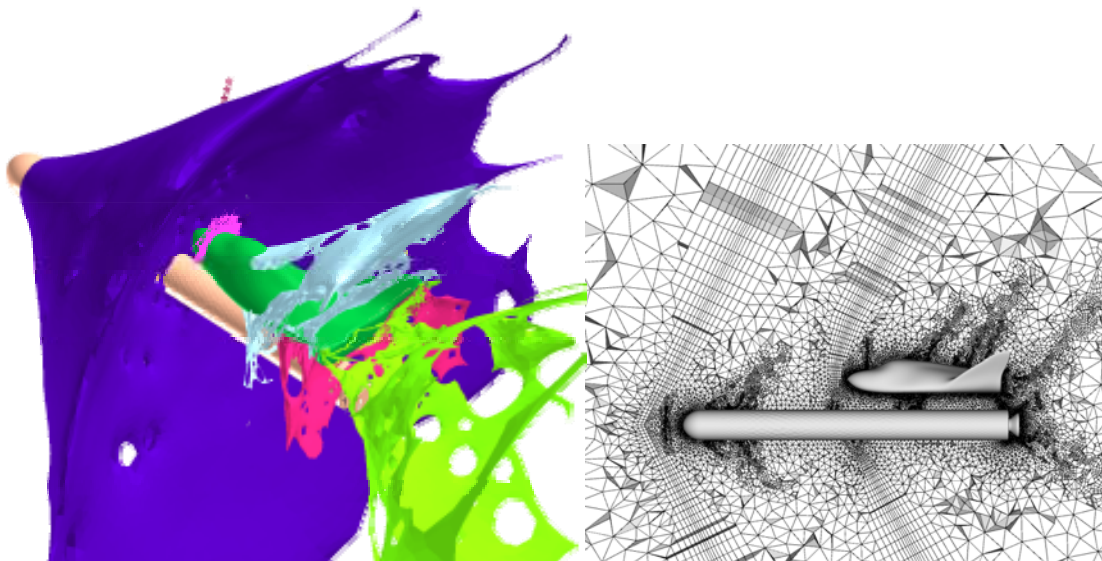


10th ISGG Conference on Numerical Grid Generation
FORTH, Crete, Greece
September 16-20, 2007



PROGRAM
www.isgg.org



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Dear Participants:

On behalf of the International Society of Grid Generation (ISGG) and the organizing committee, it is our pleasure to welcome you to the 10th ISGG Conference on Grid Generation at the FORTH, Crete, Greece, September 16-20, 2007. The ISGG provides a formal focal point for assimilating the progress and advances in grid/mesh generation and adaptation.

Geometry modeling and mesh generation continue to remain pacing crosscutting enabling technologies that limit the efficiency of computational field simulations (CFS) for complex configurations. Rapid turn-around time, reliable and accurate simulations and affordability/economy are the key ingredients needed for CFS applicability to routine design and acquisition process. The papers presented in this conference demonstrate advances realized in Cartesian, Structured, Unstructured, Hybrid, and Hexahedral mesh generation and adaptation and associated parallel processing and software systems to address this demand.

The reception and conference banquet as well as the breaks provide ample opportunities to interact with colleagues and initiate new collaborations.

The ISGG would like to THANK Dr. John Ekterinaris and Maria Papadaki of FORTH, Crete for hosting the conference and for providing logistic support and help. The dedication and hard work of Ms. Lanka Desilva and Kimberly Hazelwood is the key to the success of this conference. The ISGG would also like to express heartfelt THANKS to FORTH, IMACS, and EUAX4 support and especially to Marie Curie Actions program for providing travel support to several students. The ISGG would also like to THANK Ms. Sofia Saridaki, Astoria Hotel for her help and assistance. Thanks are also due to all participants and presenters. After the conference, if your time permits, visit the Beautiful Crete Island!

We wish you a pleasant and technically fruitful conference.

- Conference Organizing Committee Members.

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Organizing Committee

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Bharat Soni, *University of Alabama at Birmingham, USA*

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Previous ISGG Conferences

1st ISGG Conference – Landshut, Germany	1985
2nd ISGG Conference – Miami, USA	1988
3rd ISGG Conference – Barcelona, Spain	1992
4th ISGG Conference – Swansea, UK	1994
5th ISGG Conference – Starkville, USA	1996
6th ISGG Conference – Greenwich, UK	1998
7th ISGG Conference – Whistler, Canada	2000
8th ISGG Conference – Waikiki, Hawaii	2002
9th ISGG Conference – San Jose, CA	2005
10th ISGG Conference – Crete, Greece	2007
11th ISGG Conference – Birmingham, USA	2009^{***}

*****: To be Announced.....**

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Conference Agenda

Sunday, September 16, 2007

6:30 – 9:30 pm Registration & Reception
Hotel Astoria Conference Hall

Monday, September 17, 2007

8:30 am – 4:00 pm Registration

8:30 am – 9:00 am Coffee & Pastries

9:00 am – 9:15 am Conference Introduction & Welcome
Bharat Soni, Treasurer & Secretary, ISGG

9:15 am – 9:30 am Welcome
John Ekaterinaris, General Chairman

Invited Presentation

9:30 am – 10:15 am *Flow Control Applications with Synthetic and Pulsed Jets*
Ramesh K. Agarwal
Washington University in St. Louis, USA

10:15 am – 10:45 am Break

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Session – I
Grid Systems
Session Chair: Francois Guibault

10:45 am – 12:25 pm

- 10:45 am – 11:10 am *Development of Comprehensive Grid Generation Technology*
Vladimir Liseikin, Yu.N. Morokov, I.A. Vaseva, Yu.V. Likhanova
Novosibirsk State University and Institute of Computational Technologies of the Siberian Branch of the Russian Academy of Sciences, Novosibirsk, Russia
- 11:10 am – 11:35 am *The TRITET Grid Generation System*
Lars Tysell
FOI, Swedish Defence Research Agency, Sweden
- 11:35 am – 12:00 pm *GGTK & Mini-CAD Systems*
Bharat Soni, Alan Shih, Yasushi Ito, Doug Ross
University of Alabama at Birmingham, USA
- 12:00 pm – 12:25 pm *Fast Large Scale Voxelizeation using a Pedigree*
Takehiro Tawara, Kenji Ono
RIKEN, Japan

12:25 pm – 1:45 pm

Lunch

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Session – II
Surface & Geometry Treatment
Session Chair: Lars Tysell

1:45 pm – 3:25 pm

- 1:45 pm – 2:10 pm *Modeling of Airplane Wings with Winglets*
Karl-Heinz Brakhage, Philipp Lamby
Institut für Geometrie und Praktische Mathematik, RWTH
Aachen, Germany
- 2:10 pm – 2:35 pm *Improving the Accuracy of Geometric Surface Meshes by
Extracting and Integrating Ridges*
Boris Cl  men  on, H. Borouchaki, P. Laug
DASSAULT Aviation / INRIA, France
- 2:35 pm – 3:00 pm *3-D DNS of Vortex Sound by a Finite Difference Method
with a L-Grid System*
Yoshitaka Nakashima, Osamu Inoue
Department of Mechanical Systems and Design, Tohoku
University, Japan
- 3:00 pm – 3:25 pm *Efficient Treatment of Complex Geometries and Moving
Bodies using Overlapping Grids*
Joel Guerrero
University of Genova, Italy

3:25 pm – 3:45 pm

Break

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Session – III
Cartesian Meshing
Session Chair: Joerg Meyer

3:45 pm – 5:00 pm

3:45 pm – 4:10 pm *Optimization-based Robust Feature Preserving Technique
for Body-fitted Cartesian Grid Method*

Keiichiro Fujimoto

Japan Aerospace Exploration Agency, JEDI Center, Japan

4:10 pm – 4:35 pm *An Automatic Generator of Locally Refined Cartesian
Meshes for Immersed Boundary Methods*

Francesco Capizzano

CIRA – Italian Aerospace Research Center, Capua (CE),
Italy

4:35 pm – 5:00 pm *Efficient Cartesian Mesh Generation for Building-Cube
Method Using Multi-core PC*

Takashi Ishida, Shun Takahashi, Kazuhiro Nakahashi

Department of Aerospace Engineering, Tohoku University,
Japan

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Tuesday, September 18, 2007

8:30 am – 4:00 pm Registration

8:30 am – 9:00 am Coffee & Pastries

**Session – IV
Applications
Session Chair: Shahrouz Aliabadi**

9:00 am – 10:15 am

9:00 am – 9:25 am *Numerical Modeling of Divergence Constraints for MHD Equations on Curvilinear Grids*
Jochem Hauser, Hans-Georg Paap
Faculty Karl-Scharfenberg, University of Applied Sciences,
Salzgitter Campus, Germany

9:25 am – 9:50 am *The Effects of Grid Generation Methodology on Thermoelectric Simulation Performance*
Min Chen
Aalborg University, Denmark

9:50 am – 10:15 am *DNS of Aeolian Tones by a Highly-Accurate Finite Difference Method*
Yoshinori Suzuki, Osamu Inoue
Department of Mechanical Systems and Design , Tohoku,
University, Japan

10:15 am – 10:45 am Break

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Session – V
Optimization & V&V
Session Chair: Yasushi Ito

10:45 am – 12:25 pm

10:45 am – 11:10 am *Using of Conformal Mapping to the 3-D Grid Generation*
Yuriy Shevelev
The Institute for Computer Aided Design of RAS, Moscow,
Russia

11:10 am – 11:35 am *Verification and Validation of 3D Anisotropic Meshers*
Paul Labbé, François Guibault, Marie-Gabrielle Vallet,
Julien Dompierre
Department of Mathematics and Computer Science,
Laurentian University, Canada

11:35 am – 12:00 pm *Three-Dimensional Edge Swap—Verifying Catalan($N - 1$) Possibilities in an Orderly Way*
Paul Labbé, François Guibault, Julien Dompierre
Ecole Polytechnique de Montreal, Canada

12:00 pm – 12:25 pm *Accuracy Evaluation of the Unstructured Finite Volume Method in Aerodynamic Computations*
Lars Tysell
FOI, Swedish Defense Research Agency, Sweden

12:25 – 3:00 Free-Time for Self-Tour of Heraklion

3:00 pm Bus will leave from Astoria Hotel

Excursion – Vathypetro & Archanes Village

6 :30 – 9 :30 pm : Banquet – Archanes Village

9 :30 pm – Bus will return back from Restaurant

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Wednesday, September 19, 2007

8:30 am – 4:00 pm Registration

8:30 am – 9:00 am Coffee & Pastries

Session – VI
Parallel Meshing
Session Chair: Jochem Hauser

9:00 am – 10:15 am

9:00 am – 9:25 am *Octree-based Domain Partitioning for 3D Parallel Unstructured Mesh Generation*
Mohamed El Hachemi, O. Hassan, K. Morgan, N.P. Weatherill
Civil and Computational Engineering Centre, Swansea University, United Kingdom

9:25 am – 9:50 am *Experience with Memory Allocators for Parallel Mesh Generation on Multicore Architectures*
Andrey Chernikov, Christos Antonopoulos, Nikos Chrisochoides, Scott Schneider, Dimitrios Nikolopoulos
College of William and Mary, Williamsburg, Virginia, USA

9:50 am – 10:15 am *A Parallel Program for Subdividing 3-D Hybrid Unstructured Meshes*
Shuangzhang Tu, Shahrouz Aliabadi, Marvin Watts
Northrop Grumman Center for HPC, Jackson State University, Mississippi, USA

10:15 am – 10:45 am Break

Session – VII
Structured Meshing- B
Session Chair: Rosa Maria Spitaleri

10:45 am – 12:25 pm

10:45 am – 11:10 am *Hierarchical, Wavelet-based Data Structure for Structured Grids*

Joerg Meyer

University of California at Irvine, USA

11:10 am – 11:35 am *Elliptic Grid Generation by B-Spline Collocation*

Philipp Lamby

Institut für Geometrie und Praktische Mathematik, RWTH
Aachen, Germany

11:35 am – 12:00 pm *Moving Grid Structure Manipulation in Time-Dependent Flow Field Computations*

Tusar Nanda, Sarat C. Praharaj

DMS Technology, Inc., Huntsville, Alabama, USA

12:00 pm – 12:25 pm *Image-based Mesh Generation and Simulation in the Field of Coronary Artery Disease*

Bernhard Quatember, M. Mayr, H. Mühlthaler, W. Recheis
Innsbruck Medical University, Department of Diagnostic
Radiology, Austria

12:25 pm – 1:45 pm

Lunch

Session – VIII
Unstructured Meshing
Session Chair: Mohamed El Hachemi

1:45 pm – 3:25 pm

- 1:45 pm – 2:10 pm *Utilizing Topological Discrete Triangulated Data within SolidMesh*
Eric Blades, Michael Remotigue, David Marcum
Computational Simulation and Design Center, Mississippi State, USA
- 2:10 pm – 2:35 pm *Overcoming the Difficulties Related to the Discretisation of Complicated Topologies via the Advancing Front Technique*
Zacharenia Skoula, Alistair G.L. Borthwick
School of Civil Engineering, National Technical University of Athens, Greece
- 2:35 pm – 3:00 pm *An Optimization Algorithm Used for Boundary Layer Mesh Generation*
Yuan Li Wang
Ecole Polytechnique de Montreal, Canada
- 3:00 pm – 3:25 pm *Quality Improvement and Boolean-like Cutting Operations in Hexahedral Meshes*
Jason F. Shepherd, Yongjie Zhang, Claurissa J. Tuttle, Claudio T. Silva
University of Utah, USA

3:25 pm – 3:45 pm

Break

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Session – IX
Hybrid Meshes
Session Chair: John Ekaterinaris

3:45 pm – 5:00 pm

- 3:45 pm – 4:10 pm *Hybrid Mesh Generation with Embedded Surfaces*
Yasushi Ito, Alan Shih, Bharat Soni
University of Alabama at Birmingham, USA
- 4:10 pm – 4:35 pm *A Compact and Flexible Data Structure for Hybrid Mesh Storage*
François Guibault
Ecole Polytechnique de Montreal, Canada
- 4:35 pm – 5:00 pm *Hybrid O-Mesh Generation for Hydraulic Vane Optimization*
Julien Dompierre, François Guibault, Jean-François Dubé,
Horea Iepan, Thi C. Vu
Department of Mathematics and Computer Science,
Laurentian University, Canada
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Thursday, September 20, 2007

8:30 am – 9:00 am Coffee & Pastries

Session – X
Adaptive Meshing
Session Chair: Bernhard Quatember

9:00 am – 10:15 am

9:00 am – 9:25 am *Simulations with Adaptive Mesh Refinement using pFTT
Data Structure*
Masako Iwata, Kenji Ono
Kino-Joho Simulation Team, RIKEN, Japan

9:25 am – 9:50 am *Vorticity-based Mesh Adaptation for Vortex Capture*
Eric Joubarne, François Guibault, Olivier Braun, François
Avellan
Ecole Polytechnique de Montreal, Canada

9:50 am – 10:15 am *Adaptive Mesh Refinement in Building-Cube Method*
Shun Takahashi, Takashi Ishida, Kazuhiro Nakahashi
Tohoku University

10:15 am – 10:45 am Break

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Session – XI

Session Chair: Bharat Soni

10:45 am – 12:50 pm

10:45 am – 11:10 am

A Free Online Knowledge Collaborative Tool: The Numerical Grid Generation Wiktionary
Rosa Maria Spitaleri
Istituto per le Applicazioni del Calcolo-CNR, Rome, Italy

11:10 am – 11:35 am

Periodic Staggering for Turbomachinery Grids
Krishnakumar Rajagopalan, Sunil Nandihalli, and
Peter R. Eiseman, Program Development Corporation

11:35 am – 12:00 pm

Grid Generation... Where Are We Today?
Bharat Soni
University of Alabama at Birmingham, USA

12:00 pm – 12:25 pm

Classification of Hexahedral Cells
Olga Ushakova
Institute of Mathematics and Mechanics of the Ural Branch
of the Russian Academy of Sciences, Russia

12:25 pm – 12:50 pm

A Variational Approach to Hexahedral Mesh Generation
Boris Azarenok
Dorodnicyn Computing Center of the Russian Academy of
Sciences, Moscow, Russia

12:50 pm – 1:30 pm

Concluding Remarks
Bharat Soni, John Ekatendaris, Jochem Hauser,
Peter Eiseman, Francois Guibalt, Rosa Maria Spitaleri

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