Conference Schedule

Fifth M.I.T. Conference on Computational Fluid and Solid Mechanics — Focus: Advances in CFD

June 17-19, 2009

Conference Schedule Summary

Wednesday, June 17	Thursday, June 18	Friday, June 19
9:00am - 10:30am **Plenary Session**	9:00am - 10:30am **Plenary Session**	9:00am - 10:30am **Parallel Sessions CFD- I, II, III**
11:00am - 12:30pm **Parallel Sessions CFD- I, II, III**	11:00am - 12:30pm **Parallel Sessions CFD- I, II, III**	11:00am - 1:00pm **Parallel Sessions CFD- I, II, III**
2:00pm - 6:30pm **Parallel Sessions CFD- I, II, III**	2:00pm - 6:30pm **Parallel Sessions CFD- I, II, III**	

Plenary Sessions

Plenary Session for Wednesday, June 17
Chairperson: K.J. Bathe

9:00am - 9:05am
Welcome & Opening Remarks, K.J. Bathe

9:05am - 9:45am
Certified reduced basis methods; Application to incompressible fluid flow and heat transfer
A.T. Patera, M.I.T., Cambridge, MA

9:45am - 10:30am
Direct numerical simulation - Progress made and future prospects
T.K. Sengupta, Indian Institute of Technology, Kanpur, India

Plenary Session for Thursday, June 18
Chairperson: D. Boffi

9:00am - 9:45am
Stochastic CFD
G.E. Karniadakis, Brown University, Providence, RI

9:45am - 10:30am
On meshfree methods for CFD problems
G.-R. Liu, National University of Singapore, Singapore

Parallel Sessions

CFD-I

CFD-II

CFD-III

CFD-I

Wednesday, June 17

Time	Title	Authors
	Chairperson: L. Gastaldi	
11:00am	**Meshless computation of the coupled axial vibration of liquid-filled pipes**	Tijsseling, A.S.
11:30	**A new finite volume method for computing detonation and shock waves on unstructured Cartesian grids**	Baylot, J., et al.
12:00	**Modeling and drag minimization in compressible Navier-Stokes flows in bounded domains**	Sokolowski, J., et al.
12:30pm	**Lunch**	-
	Chairperson: G.-R. Liu	
2:00pm	**Computational fluid dynamics of a flow between rotating disks by using a B-spline finite element formulation**	Labbé, F.
2:30	**Integrated radial basis function networks for computing Newtonian and non-Newtonian fluid flows**	Mai-Duy, et al.
3:00	**Numerical study of interference between simple-shape bodies in hypersonic flows**	Riabov, V.V.
3:30	**Coffee Break**	-
	Chairperson: V.V. Riabov	
4:00	**Development of gradient smoothing method (GSM) for fluid flow problems**	Liu, G.-R., et al.
4:30	**Computing internal and external flows and undergoing instability and bifurcations**	Vijay, V.V.S.N, et al.
5:00	**Numerical study on aerodynamic heating reduction by opposing jet**	Barzegar G., M., et al.
5:30	-	-

6:30 – 7:15   **Reception**

7:15 – 9:00   **Banquet**

CFD-I

Thursday, June 18

	Chairperson: H. Kohno	
11:00am	**A non-isodimensional finite-element approach to the modeling of transient flow and mass transport through domains with thin layers**	El-Zein, A.
11:30	**Superconvergence of local discontinuous Galerkin methods for one-dimensional convection-diffusion equations**	Cheng, Y., et al.
12:00	**A generalized framework for high order anisotropic mesh adaptation**	Pagnutti, D., et al.
12:30pm	**Lunch**	-
	Chairperson: A. El-Zein	
2:00pm	**Analysis of flow patterns in a patient-specific thoracic aortic aneurysm model**	Tan, F.P.P., et al.
2:30	**Modelling and simulation of porous immersed boundaries**	Stockie, J.M.
3:00	**Optimization of computing times in thin film flows with moving contact lines**	Gomba, J.M.
3:30	**Coffee Break**	-
	Chairperson: J.M. Gomba	
4:00	**A numerical investigation of the flow around two staggered cylinders**	Kim, J., et al.
4:30	**Rheology and microstructure in Brownian colloidal suspensions**	Pan, W.,, et al.
5:00	**Mixing studies of double diffusive jet impingement in a channel**	Khan, S.A., et al.

5:30	**Role of Coriolis and centrifugal forces in turbulent rotating convection**	Baig, M.F.

CFD-I

Friday, June 19

Chairperson: D.-N. Kim		
9:00am	**Effective computational strategies for multi-scale models of heat transfer and flow in melt crystal growth systems**	Yeckel, A., et al.
9:30	**A mesh adaptivity procedure for CFD and fluid-structure interactions**	Zhang, H., et al.
10:00	**Dynamics of wetting revisited**	Seveno, D., et al.
10:30	**Coffee Break**	-
Chairperson: J. Derby		
11:00	**A study of transition in elliptic airfoil flapping at high angle of attacks**	Sanghi, S., et al.
11:30	**Numerical and mathematical study of core-annulus structure formation mechanisms for gas-solids two phase flow in a CFB riser**	Peng, B., et al.
12:00	**Influence of the blood model on the flow in the arterial cerebral circle region**	Obidowski, D., et al.
12:30pm	-	-
1:00	**Lunch**	-

CFD-II

Wednesday, June 17

Time	Title	Authors
Chairperson: J. Peraire		
11:00am	**On some aspects of flow past a square cylinder in incompressible viscous media**	Mondal, S.K., et al.
11:30	**On unsteady non-homogenous flows of incompressible fluids**	Massoudi, M., et al.
12:00	**Implicit Large Eddy Simulation of transitional flows over airfoils and wings**	Uranga, A., et al.
12:30pm	**Lunch**	-
Chairperson: A. Pudewills		
2:00pm	**Modeling and optimizing passive valve designs for the implantable gold micro-shunt used in glaucoma treatment**	Jin, J.L., et al.
2:30	**Computation of unsteady flows with moving boundaries using body fitted curvilinear moving grids**	Anwer, S.F., et al.
3:00	**Modeling accidental-type fluid-structure interaction problems with the SPH method**	Potapov, S., et al.
3:30	**Coffee Break**	-
Chairperson: J. Baylot		
4:00	**A mesh-free redistribution method for the simulation of diffusion in arbitrary domains**	Lakkis, I.
4:30	**Hybridizable discontinuous Galerkin methods for incompressible flows**	Nguyen, N.-C., et al.
5:00	**Modeling of fluid flow and solute transport in a shear zone at the Grimsel test site**	Pudewills, A., et al.
5:30	**Numerical study of granular mixing in free surface flows**	Massoudi, M., et al.

6:00	**Simulation of flow over elliptic cylinder with incidence using three equation k-Ω turbulence model**	Etemadi, M., et al.

6:30 – 7:15   **Reception**

7:15 – 9:00   **Banquet**

CFD-II

Thursday, June 18

Chairperson: T.K. Sengupta		
11:00am	**Magnetic control of instabilities in a thermocapillary driven liquid bridge**	Houchens, B.C.
11:30	**A Lagrangian finite element method for fluid-structure interaction problems with free surface flows**	Cremonesi, M., et al.
12:00	**A spectral element/smoothed profile method for complex-geometry flows**	Luo, X., et al.
12:30pm	**Lunch**	-
Chairperson: V. Gravemeier		
2:00pm	**On pressure-velocity coupled time-integration of incompressible Navier-Stokes equations using direct inversion of Stokes operator or accelerated multigrid technique**	Feldman, Y., et al.
2:30	**Design and analysis of a new filter for LES and DES**	Sengupta, T.K., et al.
3:00	**A parallel adaptive method for simulating shock-induced combustion with detailed chemical kinetics in complex domains**	Deiterding, R.
3:30	**Coffee Break**	-
Chairperson: R. Deiterding		

4:00	**Variational multiscale methods for large-eddy simulation of incompressible turbulent flows and variable - density turbulent flows at low Mach number**	Gravemeier, V., et al.
4:30	**Two-way coupling of fluids to rigid and deformable solids and shells with accurate tangential velocities**	Robinson-Mosher, A., et al.
5:00	**Simulation of fire tunnel using CFD method**	Bahrampoor, H, et al.
5:30	**Numerical modeling of bubbling fluidized bed using biomass**	Singh, R.I., et al.
6:00	-	-

CFD-II

Friday, June 19

Chairperson: C. Deilmann		
9:00am	**High-order accurate simulation of low-Mach laminar flow past two side-by-side cylinders using spectral difference method**	Liang, C., et al.
9:30	**Scalability of transient CFD on a large-scale Linux cluster with a parallel file system**	Loewe, B., et al.
10:00	**Prediction of transition over wind turbine blade using low Reynolds models**	Etemadi, M., et al.
10:30	**Coffee Break**	-
Chairperson: X. Wang		
11:00	**Numerical simulation of entrained flow gasifier**	Talab, I., et al.
11:30	**Discrete vortex method simulations of aerodynamic admittance in bridge aerodynamics**	Rasmussen, J.T., et al.

12:00	**A dynamic global-coefficient subgrid-scale model based on coherent structures for large-eddy simulation**	Gharazi, S.S., et al.
12:30	-	-
1:00	**Lunch**	-

CFD-III

Wednesday, June 17

Time	Title	Authors
	Chairperson: E.L. Bearer	
11:00am	**Determining the rate of NO production by endothelial cells using computational fluid dynamics and molecular fluorescence**	Song, S., et al.
11:30	**Hybrid solid-liquid functional for granular material**	Göttlicher, M.
12:00	**A goal-oriented error-controlled solver for biomedical flows**	Narayanan, H., et al.
12:30pm	**Lunch**	-
	Chairperson: J. Orkisz	
2:00pm	**Some remarks on quadrilateral mixed finite elements**	Boffi, D., et al.
2:30	**Numerical study of helicopter blade-vortex mechanism of interaction using large-eddy simulation**	Ilie, M.
3:00	**CFD analysis of a fully faired human powered vehicle passing a large truck in the opposite direction on a narrow two-lane road**	Watkins, G.
3:30	**Coffee Break**	-
	Chairperson: H. Narayanan	
4:00	**A hybridizable discontinuous Galerkin method for nonlinear hyperbolic conservation laws**	Chaurasia, H., et al.
4:30	**Recovery of high order accuracy via Gegenbauer reconstruction in radial basis function approximation for discontinuous problems**	Gottlieb, S.
5:00	**In search of optimal acceleration approach to iterative solution methods of Simultaneous Algebraic Equations**	Orkisz, J., et al.
5:30	-	-

6:30 – 7:15   **Reception**

7:15 – 9:00   **Banquet**

CFD-III

Thursday, June 18

Chairperson: X. Wang		
11:00am	**Spectral element discontinuous Galerkin lattice Boltzmann method**	Lee, T., et al.
11:30	**A novel application of computational fluid mechanics in the field of cancer**	Bearer, E.L., et al.
12:00	**Multi-scale simulations of DNA with a combined Lattice Boltzmann/Molecular Dynamics (LBMD) approach**	Kaxiras, E. et al.
12:30pm	**Lunch**	-
Chairperson: I. Emmanuel-Douglas		
2:00pm	**Performance of a new partitioned procedure versus a monolithic procedure in fluid-structure interaction**	Degroote, J., et al.
2:30	**Numerical techniques for solving the inverse retrospective problem of thermal evolution of the earth interior**	Ismail-Zadeh, A., et al.
3:00	**On different 2D+ airfoil FSI models**	Wang, X., et al.
3:30	**Coffee Break**	-
Chairperson: J. Degroote		
4:00	**Numerical evaluation of boundary shear distribution in meandering channels**	Khatua, K.K., et al.
4:30	**Numerical modeling of unsteady gas flows through porous heat-evolutional objects**	Lutsenko, N.A.
5:00	**Explicit methods for stiff ODE with application to dynamics of swimming spirochetes**	Medovikov, A.

5:30	**Finite element modeling of three-dimensional liquid sloshing in a rectangular tank with baffle**	Biswal, K.C., et al.
6:00	**A non-linear three-dimensional model for the computation of ship hydrodynamic loads**	Emmanuel-Douglas, I.

CFD-III

Friday, June 19

Chairperson: A. Ismail-Zadeh		
9:00am	**Toward an optimal massively parallel remeshing and fields mapping, application to a bimesh computational process**	Digonnet, H., et al.
9:30	**Multi-scale simulations of hemodynamics in realistic arteries**	Melchionna, S
10:00	**The generalized perturbation-based stochastic finite element methods for the fluid flow problems with aging parameters**	Kamiński, M.
10:30	**Coffee Break**	-
Chairperson: M. Kamiński		
11:00	**Transformation mapping of bubbles' 2-D circular shape to an elliptical shape under influence of a magnetic field in pool boiling in microgravity conditions**	Munasinghe, T.
11:30	**Acceleration of Hermitian/Skew-Hermitian separation for incompressible Navier-Stokes equation by parallel Gram-Schmidt process of GMRES(m)**	Zhao, D.
12:00	**Study the wind effect on Milad Tower using computational fluid dynamics**	Ziaei, M., et al.
12:30pm	**Estimating of directional conductivities of an aquifer through inverse modeling**	Barua, G.
1:00	**Lunch**	-