

# Wednesday, June 27, 2012 – AM

## **Mini Symposium M2P1: Domain Decomposition for Porous Media Flow and Transport**

**Location: Amphi**

**Chairman: Caroline Japhet and Michel Kern**

- 10:35-11:00 : Oliver Sander  
Discretizations for the Richards Equation Based on Kirchhoff Transformation
- 11:00-11:25 : Thi Thao Phuong Hoang  
Space-Time Domain Decomposition For Mixed Formulations of Transport Problems In Porous Media
- 11:25-11:50 : Frédéric Nataf  
Algebraic Domain Decomposition Methods for Highly Heterogeneous Problems
- 11:50-12:15 : Zhangxin Chen  
GPU-based Parallel Reservoir Simulators

## **Mini Symposium M15P3: Space-Time Parallel Methods**

**Location: Markov**

**Chairman: Martin J. Gander, Felix Kwok and Yvon Maday**

- 10:35-11:00 : Bankim Chandra Mandal  
Dirichlet-Neumann Waveform Relaxation for the Time Dependent Heat Equation
- 11:00-11:25 : Mohamed Kamel Riahi  
Parareal in Time Intermediate Targets Methods for Optimal Control Problem
- 11:25-11:50 : Ron Haynes  
A RIDC-DD Space-Time Algorithm for Time Dependent Partial Differential Equations
- 11:50-12:15 : Olga Mula Hernandez  
Parareal for Neutronic Core Calculations

## **Mini Symposium M13P4: Robust Multilevel Methods for Multiscale Problems**

**Location: Petri Chairman: Thomas Dufaud, Johannes Kraus, Clemens Pechstein, Robert Scheichl, Jörg Willems**

- 10:35-11:00 : Baptiste Poirriez  
Deflation and Neumann-Neumann Preconditioner for Schur Domain Decomposition Method
- 11:00-11:25 : Thomas Dufaud  
An Algebraic Multilevel Preconditioning Framework based on Information of a Richardson Process
- 11:25-11:50 : Svetozar Margenov  
Multilevel Preconditioning of Strongly Anisotropic Elliptic Problems
- 11:50-12:15 : Johannes Kraus  
Robust Domain Decomposition Multigrid Methods using Additive Schur Complement Approximation

## **Mini Symposium M9P3: Fast Solvers for Helmholtz and Maxwell equations**

**Location: Turing**

**Chairman: Victorita Dolean, Ronan Perrussel, Hui Zhang, Peng Zhen**

- 10:35-11:00 : Rosalie Belanger-Rioux  
A Fast and Accurate Absorbing Boundary Condition for the Helmholtz Equation
- 11:00-11:25 : Achim Schadle  
Curl-Conforming Hardy Space Infinite Elements for Exterior Maxwell Problems
- 11:25-11:50 : Ana Alonso Rodriguez  
Finite Element Construction of Discrete Harmonic Fields
- 11:50-12:15 : Martin Huber  
Hybrid Domain Decomposition Solvers for the Helmholtz Equation

# Wednesday, June 27, 2012 – AM

## Contributed Talks C3: Optimized Schwarz Methods

Location: I50

Chairman: Kévin Santugini

- 10:35-11:00 : Florence Hubert  
Optimized Schwarz Algorithms for Finite Volume Schemes
- 11:00-11:25 : Erell Jamelot  
Domain Decomposition for the Neutron  $SP_N$  Equations
- 11:25-11:50 : Frédéric Magoulès  
A Stochastic-based Optimized Schwarz Method for the Gravimetry Equations on GPU Clusters
- 11:50:12:15 : Lahcen Laayouni cancelled  
On the Algebraic Optimized Schwarz methods (AOSM): Performances and Applications

## Contributed Talks C8: Application to Flow Problems

Location: I51

Chairman: Taoufik Sassi

- 10:35-11:00 : Aivars Zemitis  
On Domain Decomposition Based Software Tool for Flow Simulation in Containment Pools of Nuclear Reactors
- 11:00-11:25 : Leonardo Baffico  
A Fluid Structure Interaction Problem with Friction-Type Slip Boundary Condition
- 11:25-11:50 : François Pacull  
Krylov Acceleration of Schur Complement Type Iterations for Linearized CFD Systems: a Numerical Examination
- 11:50:12:15 : Daniel Loghin  
Interface Preconditioners for Flow Problems

# Wednesday, June 27, 2012 – PM

## Mini Symposium M2P2: Domain Decomposition for Porous Media Flow and Transport

Location: Amphi

Chairman: Caroline Japhet and Michel Kern

- 16:05-16:30 : Bernd Flemisch  
Model Coupling for Multiphase Flow in Porous Media
- 16:30-16:55 : Paul-Marie Berthe  
Space-Time Domain Decomposition with Finite volumes for Porous Media Applications
- 16:55-17:20 : Jean-Baptiste Apoung Kanga  
A Numerical Zoom Preconditioner for Discontinuous Galerkin Domain Decomposition Approximation of Darcy Flow
- 17:20-17:45 : Anthony Michel  
Time Space Domain Decomposition for Reactive Transport in Porous Media. Application to CO2 Geological Storage

## Mini Symposium M18P1: Solvers for Discontinuous Galerkin Methods

Location: Markov

Chairman: Blanca Ayuso de Dios, Susanne C. Brenner

- 16:05-16:30 : Kolja Brix  
Robust Preconditioners for DG-Discretizations with Arbitrary Polynomial Degrees on Locally Refined Meshes
- 16:30-16:55 : Alexandre Pieri  
BDDC Preconditioners: from hp-Continuous to Discontinuous Galerkin Schemes with different Local Polynomial Degrees
- 16:55-17:20 : Christoph Lehrenfeld  
DD Preconditioning for High Order Hybrid DG Methods on Tetrahedral Meshes
- 17:20-17:45 : Eun-Hee Park  
A BDDC Method for a Symmetric Interior Penalty Galerkin Method

## Mini Symposium M20 : Domain Decomposition and Multiscale Methods

Location: Petri

Chairman: Petter E. Bjørstad

- 16:05-16:30 : Juan Galvis  
Domain Decomposition and Multiscale Methods for High-contrast Elliptic Equations
- 16:30-16:55 : Robert Scheichl  
Weak Approximation Properties of Elliptic Projections with Functional Constraints
- 16:55-17:20 : Rui Du  
Two-Level Additive Schwarz Methods with Adaptive Sampling Coarse Spaces for Multiscale Problems in High Contrast Media
- 17:20-17:45 : Talal Rahman cancelled  
Alternative Coarse Spaces for Additive Schwarz Methods for Multiscale Elliptic Problems

## Mini Symposium M9P4: Fast Solvers for Helmholtz and Maxwell equations

Location: Turing

Chairman: Victorita Dolean, Ronan Perrussel, Hui Zhang, Peng Zhen

- 16:05-16:30 : Ronan Perrussel  
Schwarz Methods for Time-Harmonic Maxwell's Equations Discretized by a Hybridized Discontinuous Galerkin Method
- 16:30-16:55 : Jack Poulson  
A Parallel Sweeping Preconditioner for High-Frequency Heterogeneous 3d Helmholtz Equations
- 16:55-17:20 : Zhen Peng  
Speed up Non-conformal DDM Convergence using an Asymmetric Optimal Transmission Condition
- 17:20-17:45 : Stéphane Lanteri  
Discretization of Optimized Schwarz Methods for Maxwell's Equations

# Wednesday, June 27, 2012 – PM

## Contributed Talks C9: Multidomains and Time Domain Decomposition

Location: I50

Chairman: Xiao-Chuan Cai

- 16:05-16:30 : Xiao-Chuan Cai  
Parallel Implicit Method for Phase-Field Problems
- 16:30-16:55 : Felix Kwok  
Analysis of a Predictor-Corrector Method with Many Subdomains
- 16:55-17:20 : Martin Cermak  
Total-FETI Domain Decomposition Method for Solving Elasto-Plastic Problem with Contact
- 17:20-17:45 : Damien Tromeur-Dervout  
Non Linear Boundary Conditions for Time Domain Decomposition Method

## Contributed Talks C10: Application to Flow Problems

Location: I51

Chairman: Frédéric Magoulès

- 16:05-16:30 : Jyri Leskinen  
Distributed Shape Optimization Using the Coupling of DDM of Nonlinear Flows and GDM of Shapes on a Hybrid CPU/GPU Platform
- 16:30-16:55 : Mohamed Khaled Gdoura  
Domain Decomposition for Stokes Problem with Tresca Friction: Augmented Lagrangian Approach
- 16:55-17:20 : Thu Huyen Dao  
A Schur Complement Method for Two-Phase Flow Models
- 17:20-17:45 : Guillaume Houzeaux  
Schur or not Schur: not so sure