

7th International Workshop on Model Reduction in Reacting Flows

Location

Department of Energy and Process Engineering
Norwegian University of Science and Technology
Kolbjorn Hejes vei 1b, Trondheim
Norway



Scientific Committee

Dimitris A. Goussis	National Technical University of Athens, Greece
Ulrich Maas	Karlsruhe Institute of Technology, Germany
Fabian Mauss	Brandenburg University of Technology, Germany
Habib N. Najm	Sandia National Laboratories, USA
Samuel Paolucci	University of Notre Dame, USA
Joseph M. Powers	University of Notre Dame, USA
Mauro Valorani	Sapienza University of Rome, Italy

Local Organizing Committee:

Terese Løvås	Norwegian University of Science and Technology
Debbie von Koreman	Norwegian University of Science and Technology

Program

Day 1 - Tuesday 18th June

Arrival and Registration

18:00 – 20:00: Welcome Reception, [SIT Café Elektro](#), O.S. Bragstads Plass

Day 2 – Wednesday 19th June

[Department of Energy and Process Engineering, Varmeteknisk, C201](#)

Kolbjørn Hejes vei 1B

08:30-	Registration
09:15	Welcome
Session 1 – Time Scales and Sensitivity Analysis – Chair:	
09:30	CSP analysis of Local Sensitivity data E Tingas and D Goussis
10:00	Unravelling the chemical and transport characteristics of turbulent MILD combustion D M Manias , E Tingas, Y Minamoto, H G Im
10:30	Coffee Break
11:00	Analysis of Premixed Heptane/Air Cool Flames at Different Ignition Damkoler Number T Zhang, T Grenga , Y Ju
11:30	Controlling NOx Emissions by Oscillating Combustion: Open System Models with Periodic Forcing M Valorani , R M Galassi, P P Ciottoli
12:00	Lunch , SIT Café Elektro
Session 2 – Attractive Manifolds – Chair:	
13:00	Comparing dynamical trajectories in manifold coordinates T A Casey , H N Najm
13:30	Analytic continuation and differential geometry views on slow manifolds and separatrices D Lebiedz , J Dietrich, M Heitel, J Poppe
14:00	Slow invariant manifolds of analytic dynamical systems J Dietrich and D Lebiedz
14:30	Coffee Break
15:00	Stretching-Based Diagnostics in a Differential Geometry Setting J Poppe and D Lebiedz
15:30	Characterization of Separatrices in Holomorphic Dynamical Systems M Heitel and D Lebiedz
16:00	Internal dimension of a combustion system: analysis based on reaction source term ridges R Schießl and V Bykov
16:30	Lab Tour
~18:00	Banquet , Studentersamfundet Trondheim
~20:00	Committee Meeting

Day 3 – Thursday 20th June

[Department of Energy and Process Engineering, Varmeteknisk, C201](#)

Kolbjørn Hejes vei 1B

Session 3 – Mechanism Simplification – Chair:	
09:00	Applying G-Scheme based Sensitivity Analysis to Aromatic Formation Pathways and Comparison with Experimental Data M Baroncelli, T Grenga , N Hansen, H Pitsch
09:30	Optimization of the architecture of a virtual chemical mechanism H Maldonado , C Yu, N Darabiha, U Maas, B Fiorina
10:00	Space-Time Adaptive Reduction of Unsteady Flamelets S Gemini, P P Ciottoli, R Malpica Galassi, T Grenga, S Paolucci, M Valorani
10:30	Coffee Break
11:00	Reduced Order Modeling for Turbulent Premixed Flames with Dynamic Mode Decomposition T Grenga , K Kleinheinz, A Attili, H Pitsch
11:30	Stochastic reduction using surrogate-based sensitivity estimates M Hantouche , S Almohammadi, O M Knio
12:00	Lunch , SIT Café Elektro
Session 3 Cont. — Chair:	
13:30	Explicit Time Integration of the Stiff Chemical Langevin Equations using Computational Singular Perturbation X Han , M Valorani, H N Najm
14:00	Singular Perturbed Vector Fields of Reaction-Diffusion Systems V Bykov and V Goldshtein
14:30	Coffee Break
15:00	Departure to Cathedral (by foot)
15:30	Cultural Event Nidarosdomen (Cathedral) , Nidarosdomen
18:00	Social Dinner Tapas , Restaurant To Tårn (Two Towers)

Day 4 – Friday 21st June

[Department of Energy and Process Engineering, Varmeteknisk, C201](#)

Kolbjørn Hejes vei 1B

Session 4 – Applied Engineering – Chair:	
09:00	Physics-Based Approach to Reduction of Real Fuel Combustion Reaction Models H Wang , R Xu, Y Gang and T Lu
09:30	A Computationally Efficient Combustion Progress Variable Approach for Engine Applications L Seidel , F Mauss, C Netzer, A Borg, A Werner, A Matrisciano
10:00	Reduced mechanisms for emission control in solid fuel combustion with SNCR T Li , Ø Skreiberg, T Løvås, P Glarborg
10:30	Coffee Break
Session 5 – Reaction Diffusion Systems – Chair:	
11:00	Reaction-Diffusion Manifolds (REDIM) for the simulation of laminar counterflow diffusion flames C Yu, F Minuzzi, U Maas
11:30	Global Quasi-linearisation (GQL) method for hydrogen/air laminar premixed flame C Yu , V Bykov, U Maas
12:00	Reaction-Diffusion Manifolds (REDIMs) for premixed combustion systems – automatic manifold generation procedure V Bykov and U Maas
12:30	Closing
13:00	Lunch
END	

