

DSFD-2014-Paris

Program

28 July – 01 August 2014

Monday 28	Tuesday 29	Wednesday 30	Thursday 31	Friday 01
0900 Invited – 1 chair Karlin	Invited – 2 Succi	Invited – 3 Lallemand	Invited – 4 Ripoll	Invited – 5 Wagner
9h00 Yves Pomeau 9h45 Miller Mendoza	Laure Saint-Raymond Dave Levermore	Alexander Bobylev Li-Shi Luo	Yves Couder Irina Ginzburg	Paulo Philippi Jonas Tölke
10h30 pause	pause	pause	pause	pause
11h00 Tutorial – 1 chair Pomeau	Tutorial – 2 Saint-Raymond	Tutorial – 3 Bobylev	Tutorial – 4 Couder	Tutorial – 5 Philippi
11h00 Paul Dellar 11h45 Granular	Roberto Benzi Rarefied gases	Marisol Ripoll Industrial applications	Jean-Pierre Boon multidisciplinary	Julia Yeomans Droplets – 1
12h45 lunch	lunch	lunch	lunch	lunch
14h15 Algorithms – 1 chair Mendoza	Simulation – 1 Levermore	14h – 17h : Social program « Bateaux mouches »	Materials, interfaces Boon	Droplets – 2 Tölke
14h15 Particles in Flows chair Dellar	Compressible, turbulence Benzi		Rheology Harting	
16h15 pause	pause		pause	pause
16h45 Algorithms – 2 chair Ansumali	Simulation – 2 d'Humières		Porous media Ginzburg	Droplets – 3 Yeomans
16h45 Combustion, particles chair Boghosian	Quantum fluids, heat transfer Gatignol		Biophysics Luo	
18h45 end 20h00 22h30	end		end of sessions Banquet at « La Coupole » end of banquet	End of the conference (18h).

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Friday 01

11h45 **Granular**Maynar, Garcia, Trizac
Almazan, Serero, et al.
Garcia, Maynar, Brey**Rarefied gases**Aoki, Taguchi
Taguchi
Xu**Industrial applications**Tannoury, Ricot, et al.
Zhang, Sun
Bondino, Yang, Adler**multidisciplinary**Boghossian
Succi, Chotibut, Nelson
Chikatamarla, Karlin**Droplets – 1**Ashoke Raman et al.
Hessling, Harting
Baglin, Barber, Rosengarten14h15 **Algorithms – 1**Graille
Heubes, Bartel, et al.
Zeiser, Wittmann, et al.
Dellacherie
Hegele, Mattila, et al.
Zheng**Simulation – 1**Khromov, Shan, et al
Vedula, Aliat
Feng, Sagaut, Tao
Yang, Tsai, Chang
Mattila
Ambrus et al.

Dussane

Materials, interfacesYounsi, Cartalade
Ammer, Rude, et al.
Ju, Lin, Lin
Velasco Sabogal, et al.
Favier
Morrison et al.**Droplets – 2**Medvedev, et al.
Qin
Lycett-Brown, Luo
Ping, Xiaodong, Hui, Xingwei
Jian, Michon, et al.
Bogner, Rude, Harting14h15 **Particles in Flows**Seil, Pirker
Jung, Yoo, Leo
Yu, Vinkovic, Buffat
Fu, Yuen, Chao
Mountrakis, et al.
Prohm, Stark**Compressible, turbulence**Jung et al.
Leveque, Touil, et al.
Herault, Petrelis, Fauve
Toth, Hazi
Delbosc et al.
Pradhan, Kumaran

des Actes

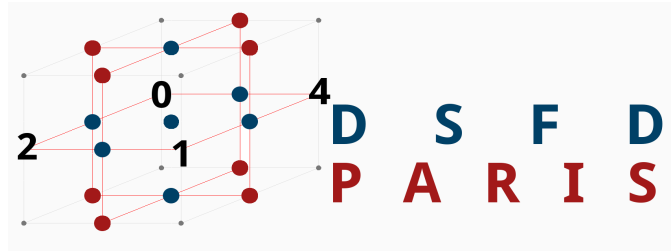
RheologyScagliarini et al.
Mishra, Shor, et al.
Stratford, Gray
Frijters, Gunther, et al.
Krueger, Harting16h45 **Algorithms – 2**Frapolli, Karlin et al.
Roux, Ginzburg
Patel, Perko
Fevrier, Graille, et al.
Boesch, Karlin et al
Pavan, Jobic, Occelli**Simulation – 2**Kumar Verma et al.
Laksh. Reddy et al
Tekitek et al.
Shrestha et al.
Shi, Chai, Guo
Ju, Xiang, Sun

Dussane

Porous mediaTalon, Chevalier, Bauer
Zhang, Shi
Schmieschek, Harting, et al.
Gray, Welch, Boek et al
Straka
Silva-Ginzburg**Droplets – 3**Wagner
Biciusca, et al.
Montessori, La Rocca, et al.16h45 **Combustion, particles**Looije, Akker, et al.
de Graaf, Rempfer, et al.
Xu, Zhang, Lin
Luo, Qian
A. E. Fard, Thevenin
Hui, Xiaodong et al.**Quantum fluids, heat transfe**Mohseni, Mendoza, et al.
Doria, Coelho, et al.
Bertolaccini, et al.
Schiller, Fleury et al.
Yehya, Naji, Zalewski
Maquignon et al.

des Actes

BiophysicsPickl, Kostler, Rude
Randles, Kaxiras
Nazir, Low
Dong, Chen
Krithivasan, et al.
Wang-Shi



23rd International Conference on Discrete Simulation of Fluid Dynamics

Ecole Normale Supérieure, Paris, France

28 July – 01 August 2014

Program

Monday 28 July 2014

08h00 – 08h50 Registration

08h50 – 09h00 Opening (salle Dussane)
 session chair : François Dubois
 Welcome
Stéphan Fauve

09h00 – 10h30 Invited – 1 (salle Dussane)
 session chair : Ilya Karlin
 An example of granular material: solid beads in an neo-hookean matrix
Yves Pomeau
 Kinetic formulation of the Kohn-Sham equations for *ab initio* electronic structure calculations
Miller Mendoza

10h30 – 11h00 Coffee break (Restaurant)

11h00 – 11h45 Tutorial – 1 (salle Dussane)
 session chair : Yves Pomeau
 Discrete velocity models: a tutorial
Paul Dellar

11h45 – 12h45 Granulars (salle Dussane)
 session chair : Yves Pomeau
 Hydrodynamics of a granular gas close to a stationary state
Pablo Maynar
 Hydrodynamic simulation of granular sedimentation
Lidia Almazan
 Fluctuating hydrodynamics for granular gases
Maria Isabel Garcia de Soria

- 12h45 – 14h15 Lunch (Restaurant)
- 14h15 – 16h15 Algorithms – 1 (salle Dussane)
 session chair : Miller Mendoza
- Approximation of hyperbolic systems: a lattice Boltzmann scheme as a relaxation method
Benjamin Graille
- Discrete artificial boundary conditions for the lattice Boltzmann method
Daniel Heubes
- Predicting performance: on performance engineering applied to LBM
Thomas Zeiser
- Construction and analysis of lattice Boltzmann methods applied to a 1D convection-diffusion equation
Stéphane Dellacherie
- Regularized boundary conditions for high-order lattice-Boltzmann equations
Luis A. Hegele Jr.
- Invariance and entropy in the lattice Boltzmann methods
Zheng Ran
- 14h15 – 16h15 Particles in Flow (salle des Actes)
 session chair : Paul Dellar
- Modelling of lateral migration of particles in channel flow in two and three dimensions:
 the Segré-Silberberg effect revisited
Philippe Seil
- A coarse-grained lattice model for instability deposit patterns in an evaporating droplet
Narina Jung
- Finite size particle transport in turbulent channel flow
Wenchao Yu
- Finite difference lattice Boltzmann simulation on acoustics induced particle deposition
Saichung Fu
- Revisiting the use of the immersed-boundary method for simulations of suspended particles
Lampros Mountrakis
- Control of inertial microfluidics
Christopher Prohm
- 16h15 – 16h45 Coffee break (Restaurant)
- 16h45 – 18h45 Algorithms – 2 (salle Dussane)
 session chair : Santosh Ansumali
- Consistent two-population lattice Boltzmann model for thermal flows
Nicolo Frapolli
- Accurate and stable LBE modeling of the Taylor dispersion
Laetitia Roux
- General boundary conditions for advection-diffusion equation in lattice Boltzmann methods
Ravi A. Patel
- On stability of lattice Boltzmann schemes with relative velocities
Tony Février
- Knotted vortices: entropic lattice Boltzmann method for simulation of vortex dynamics
Fabian Bösch
- Vector BGK models for fluid flows: incompressible Navier-Stokes and convection diffusion equations
Vincent Pavan

- 16h45 – 18h45 **Combustion and Particles (salle des Actes)**
 session chair : Bruce Boghosian
- Simulating surface reactions with a multi-speed lattice Boltzmann method
Niels Looije
- Catalytically driven anisotropic self-propelled colloids
Joost de Graaf
- Nonequilibrium behaviors in the combustion system: lattice Boltzmann modeling
Aiguo Xu
- Study of the sintering behaviour of many TiO₂ nanoparticles via molecular dynamics simulation
Kai H. Luo
- Immersed boundary-lattice Boltzmann modeling of particulate flows using different discrete delta functions
 and force schemes
Amir Eshghinejad Fard
- Bubble motion and interaction under buoyancy by lattice Boltzmann method
Meng Hui

Tuesday 29 July 2014

- 09h00 – 10h30 **Invited – 2 (salle Dussane)**
 session chair : Sauro Succi
- From molecular dynamics to kinetic theory and hydrodynamics
Laure Saint-Raymond
- Coarsening of particle systems: from many to fewer particles
C. David Levermore
- 10h30 – 11h00 **Coffee break (Restaurant)**
- 11h00 – 11h45 **Tutorial – 2 (salle Dussane)**
 session chair : Laure Saint-Raymond
- Fully developed turbulence: a tutorial introduction
Roberto Benzi
- 11h45 – 12h45 **Rarefied Gases (salle Dussane)**
 session chair : Laure Saint-Raymond
- Motion of an array of plates in a rarefied gas caused by radiometric force
Kazuo Aoki
- Higher order correction to the drag exerted on the sphere immersed in a slow uniform flow of a rarefied gas
Satoshi Taguchi
- Unified gas-kinetic scheme for continuum and rarefied flows
Kun Xu
- 12h45 – 14h15 **Lunch (Restaurant)**
- 14h15 – 16h15 **Simulation – 1 (salle Dussane)**
 session chair : C. David Levermore
- Weak coupling for hybrid molecular dynamics – lattice Boltzmann simulations
Oleg Khromov
- Collisional lattice Boltzmann method using arbitrary lattices in 2D and 3D velocity spaces
Prakash Vedula
- A three dimensional DDF lattice model for thermal compressible flow on standard lattices
Yongliang Feng

Generalized hydrodynamic flows based on semiclassical lattice Boltzmann-BGK ellipsoidal statistical model

Jaw-Yen Yang

A finite-difference lattice-Boltzmann scheme for hydrodynamic simulations

Keijo Mattila

Lattice Boltzmann models based on half-space quadratures and the corner transport upwind method

Victor E. Ambrus

14h15 – 16h15 Compressible, Turbulence (salle des Actes)

session chair : Roberto Benzi

A low Mach correction for the Godunov scheme applied to the linear wave equation with void fraction

Jonathan Jung

Turbulence modeling in the framework of the lattice Boltzmann method

Emmanuel Lévêque

1/f spectrum in two-dimensional turbulence

Johann Herault

Spin-up effect of roughness on turbulence in square and circle container

Gabor Toth

Real-time simulation and visualisation of air flow in datacenters and hospitals

Nicolas Delbosc

Analytical and numerical modeling of strongly rotating rarefied gas flows

Sahadev Pradhan

16h15 – 16h45 Coffee break (Restaurant)

16h45 – 18h45 Simulation – 2 (salle Dussane)

session chair : Dominique d'Humières

Multiparticle collision dynamics simulation of microflows

Vicky Kumar Verma

Weak shock waves in dilute granular gases

M.H. Lakshminarayana Reddy

Boundary conditions revisited

Mohamed Mahdi Tekitek

Can finite-volume lattice Boltzmann outperform streaming-based algorithm in fluid-dynamics simulations?

A one-to-one accuracy and performance study

Kalyan Shrestha

Rectangular lattice BGK model for Navier-Stokes equation

Baochang Shi

Study on the stability of high speed sailing for amphibious vehicle based on SPH method

Dongmei Ju

16h45 – 18h45 Quantum fluids, Heat transfer (salle des Actes)

session chair : Renée Gatignol

Relativistic effects on the Richtmyer-Meshkov instability

Farhang Mohseni

A lattice Boltzmann method for quantum fluids

Mauro M. Doria

Lattice Boltzmann scheme for superfluid ^4He dynamics

Jonathan Bertolaccini

Coupled excitations of phonon modes in microfluidic crystals
Ulf D. Schiller

Numerical analysis of entropy generation within a convective heat transfer enclosure
using a lattice Boltzmann thermal model

Alissar Yehya

Dynamic mesh refinement for lattice Boltzmann models using criterion of non equilibrium stress tensor
Nicolas Maquignon

Wednesday 30 July 2014

- 09h00 – 10h30 Invited – 3 (salle Dussane)
 session chair : Pierre Lallemand
Discrete simulation Monte Carlo (DSMC) methods for Coulomb collisions in plasma and some open
 mathematical problems for Landau kinetic equation
Alexander Bobylev
- Modeling and simulation of gaseous microflows
Li-Shi Luo
- 10h30 – 11h00 Coffee break (Restaurant)
- 11h00 – 11h45 Tutorial – 3 (salle Dussane)
 session chair : Alexander Bobylev
Colloids with multiparticle collision dynamics: from point particles to Janus particles
Marisol Ripoll
- 11h45 – 12h45 Industrial applications (salle Dussane)
 session chair : Alexander Bobylev
Validation of a new CFD solver based on the lattice Boltzmann method
Elias Tannoury
- Lattice Boltzmann method for complex three dimensional transonic flows
Raoyang Zhang
- Lattice-Boltzmann for digital petrophysics: considerations from an industry perspective
Igor Bondino
- 12h45 – 14h00 Lunch (Restaurant)
- 14h00 – 17h00 Social Program
14h00 Departure from Ecole Normale Supérieure
14h45 - 15h00 Boarding at « Escale Notre-Dame Saint Michel » (Pont Saint Michel)
15h00 - 16h30 Seine tour with the « Bateaux Parisiens »
16h30 End of the Seine tour at « Tour Eiffel »
16h30 – 17h00 Free program or Return at Ecole Normale Supérieure.

Thursday 31 July 2014

- 09h00 – 10h30 Invited – 4 (salle Dussane)
session chair : Marisol Ripoll
A physical system with an information exchange between a particle and a wave
Yves Couder

Analysis of the LBE schemes: bulk, boundaries, interfaces
Irina Ginzburg
- 10h30 – 11h00 Coffee break (Restaurant)
- 11h00 – 11h45 Tutorial – 4 (salle Dussane)
session chair : Yves Couder
Anomalous diffusion
Jean Pierre Boon
- 11h45 – 12h45 Multidisciplinary (salle Dussane)
session chair : Yves Couder
Discrete kinetic models of the economy
Bruce Boghosian

Flow-driven delocalization of populations with heterogeneous growth rates
Sauro Succi

Entropic lattice Boltzmann method for fluid dynamics: thermal, multi-phase and turbulent flows
Shyam S. Chikatamarla
- 12h45 – 14h15 Lunch (Restaurant)
- 14h15 – 16h15 Materials, Interfaces (salle Dussane)
session chair : Jean-Pierre Boon
Lattice Boltzmann simulations of hydrodynamic effects on crystal growth of binary mixture
Amina Younsi

Modeling of thermodynamic phenomena with lattice Boltzmann method for additive manufacturing processes
Regina Ammer

Lattice Boltzmann simulations of droplet resting on partial wetting Micro-structured surfaces
Yu-Tang Ju

Study of hydrodynamic instabilities with a multiphase lattice Boltzmann model
Ali Mauricio Velasco Sabogal

Coupling lattice Boltzmann and immersed boundary methods for fluid-structure interactions involving flexible slender geometries
Julien Favier

Using lattice-Boltzmann to determine the burial and scour of cylinder shaped objects at the bottom of the ocean
Helen Morrison
- 14h15 – 16h15 Rheology (salle des Actes)
session chair : Jens Harting
Numerical investigations of the soft-glassy rheology of concentrated emulsions
Andrea Scagliarini

Atomistic theory and simulation of shear localization in three-dimensional amorphous solid
Pankaj Mishra

Large colloids in cholesteric liquid crystals

Kevin Stratford

Induced phase transitions of nanoparticle-stabilized emulsions

Stefan Frijters

Stabilising emulsions with deformable particles: an immersed boundary-lattice Boltzmann study

Timm Krueger

16h15 – 16h45 Coffee break (Restaurant)

16h45 – 18h45 Porous media (salle Dussane)

session chair : Irina Ginzburg

On the determination of a generalized Darcy equation for yield stress fluid in porous media using a LB TRT scheme

Laurent Talon

Pore-scale study of miscible viscous fingering phenomenon in porous media

Ting Zhang

Evaluation of a ternary lattice Boltzmann model for flow in porous media

Sebastian Schmieschek

Reactive flow and dissolution of solid mineral particles with application to CO2 sequestration operations

Farrel Gray

LBM simulation of gas flow and load heating in shaft furnace

Robert Straka

Numerical evaluation of the TRT scheme for Stokes-Brinkman-Darcy flows through a square array of cylindrical porous obstacles

Goncalo Silva

16h45 – 18h45 Biophysics (salle des Actes)

session chair : Li-Shi Luo

Simulating the swimming of microorganisms towards swarming

Kristina Pickl

A parallel-in-time method applied to lattice Boltzmann simulations of cardiovascular flow

Amanda Randles

A study of insect flapping wing aerodynamics based on immersed boundary - lattice Boltzmann method

Tayyab Nazir

Numerical simulation of self-propulsion jelly fish at low Reynolds number

Dibo Dong

Flapping flight simulations using lattice Boltzmann method

Siddharth Krithivasan

A study on the effect of stent strut shape on the hemodynamics of stented aneurysms using lattice Boltzmann method with non-uniform mesh

Lei Wang

20h00 – 22h00

Conference Banquet

Location : restaurant « La Coupole »,

102 boulevard du Montparnasse, tel. +33 1 43 20 14 20.

Friday 01 August 2014

- 09h00 – 10h30 Invited – 5 (salle Dussane)
 session chair : Alexander Wagner
High order lattice-Boltzmann equations for multiphase/multicomponent flow
Paulo C. Philippi

Lattice Boltzmann methods for digital rock physics
Jonas Toelke
- 10h30 – 11h00 Coffee break (Restaurant)
- 11h00 – 11h45 Tutorial – 4 (salle Dussane)
 session chair : Paulo C. Philippi
Modelling drops on micropatterned surfaces.
Julia M. Yeomans
- 11h45 – 12h45 Droplets – 1 (salle Dussane)
 session chair : Paulo C. Philippi
Simultaneous impact of two droplets on stationary and moving films
K. Ashoke Raman

Self similarity of coalescing droplets on substrates
Dennis Hessling

Investigation of turbulent flow over superhydrophobic surfaces using the lattice Boltzmann method.
Andrew Baglin
- 12h45 – 14h15 Lunch (Restaurant)
- 14h15 – 16h15 Droplets – 2 (salle Dussane)
 session chair : Jonas Toelke
Thermal lattice Boltzmann method for multiphase flows
Dmitry Medvedev

Phase equilibrium property of phase separation in shear flow
Rongshan Qin

Forcing terms in the lattice Boltzmann method
Daniel Lycett-Brown

Dynamic characteristics of three particles aligned movement in an inclined channel
Hu Ping

Numerical and experimental investigation of droplet impact on a highly viscous liquid basin
Zhen Jian

Simulation of surface tension and wetting in the free surface lattice Boltzmann method
Simon Bogner
- 16h15 – 16h45 Coffee break (Restaurant)
- 16h45 – 17h45 Droplets – 3 (salle Dussane)
 session chair : Julia M. Yeomans
Towards a computational modeling of structure formation in colloidal drying
Alexander J. Wagner

Simulation of liquid-vapour phase separation on GPUs using Lattice Boltzmann models with
off-lattice velocity sets
Tonino Biciusca

Multi-range pseudo-potential method on higher-order three-dimensional lattices
Andrea Montessori
- 17h45 – 18h00 End of « DSFD 2014 Paris ».