# Direct Simulation Monte Carlo: The Past 40 Years and the Future

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## Monday, June 2nd

**Morning Session**

9:00-9:10 Welcome
9:15-9:50 Graeme Bird
General DSMC Programs for Engineering and Scientific Studies

9:55-10:30 Wolfgang Wagner
DSMC and the Boltzmann equation

10:35-11:10 Mikhail Ivanov
Statistical simulation of reentry capsules in hypersonic near-continuum flows

*Coffee Break*

11:30-12:05 Nicolas Hadjiconstantinou
DSMC in micro/nanoscale science and technology

12:10-12:45 Iain Boyd
The Information Preservation Method: A Variant of DSMC With Reduced Statistical Fluctuations

*Lunch Break*

**Afternoon Session**

15:00-15:35 David Goldstein
DSMC: A link among physical regimes and used in novel applications

15:40-16:15 Kazuo Aoki
Monte Carlo simulation of rarefied gas flows between two coaxial circular cylinders

*Coffee Break*

16:45-17:20 Giovanni Russo
Time Relaxed Monte Carlo Methods: effective time discretization for large range of mean free path

17:25-18:00 Lorenzo Pareschi
The Time Relaxed Monte Carlo method: towards an hybrid strategy for multiscale kinetic equations

## Tuesday, June 3rd

**Morning Session**

9:00-9:35 Stefan Luding
From dilute to very dense (granular, dissipative) gases

9:40-10:15 Andres Santos
Can a system of elastic hard spheres mimic the properties of a granular gas?

10:20-10:55 Michel Mareschal
Hydrodynamic behavior for Lyapunov exponents

*Coffee Break*

11:30-12:05 Maria Jose Ruiz-Montero
On The Validity of the Boltzmann Equation to Describe Rapid Granular Flows

12:10-12:45 Javier Brey
Transversal inhomogeneities in dilute fluidized granular fluids

*Lunch Break*

**Afternoon Session**

15:00-15:35 Patricio Cordero
The one-dimensional dissipative Boltzmann equation for point particles up to the clustering regime

15:40-16:15 Rodrigo Soto
Macroscopic boundary condition in vibro-fluidized granular media

*Coffee Break*

16:45-17:20 Sergej Rjasanow
Direct simulation of the uniformly heated granular Boltzmann equation

17:25-18:00 *Round Table Discussion*

## Wednesday, June 4th

**Morning Session**

9:00-9:35 Annie Lemarchand
Sensitivity of thermal explosion to departure from partial equilibrium

9:40-10:15 Florence Baras and M. Malek-Mansour
*TO BE ANNOUNCED*

10:20-10:55 Raymond Kapral
Molecular Dynamics in Mesoscopic Environments

*Coffee Break*

11:30-12:05 Savino Longo
Monte Carlo Simulation of gas-phase coherent Processes

12:10-12:45 Domenico Bruno
Chemical Kinetics behind Shock Waves

*Lunch Break*

**Afternoon Session**

15:00-15:35 Carlo Cercignani
The attractors of the Rayleigh-Benard Flow of a Rarefied Gas

15:40-16:15 Stefan Stefanov
Direct Monte Carlo Simulation of Gas Flows through Highly Porous Media

16:20-16:55 Michael Gallis
The Direct Simulation Monte Carlo Method and Chapman-Enskog Gas Flows

**BANQUET**

## Thursday, June 5th

**Morning Session**

9:00-9:35 Alejandro Garcia
Fluctuations in DSMC

9:40-10:15 Masahiro Ota
DSMC Simulations of Carbon Deposition on Glass Plate and Comparisons with Experiments

10:20-10:55 Aldo Frezzotti
Models for non-equilibrium structure of the vapor-liquid interface

*Coffee Break*

11:30-12:30 *Round Table: The Future of DSMC?*