Thursday 4 December

8.30   Registration

9.15   **Welcome Address**
E. Heintzé, Scientific Director (IFPEN, France)

Session 1: LES modeling and numerics

9.30   **Numerical and experimental analysis of intake-port boundary-layer modeling and its influence on fluctuations of the large-scale charge motion**
F. Hartmann[1], S. Buhl[1], P. Kranz[2], M. Schild[2], S. Kaiser[2], C. Hasse[1]
(1 TU Bergakademie Freiberg, 2 Univ. of Duisburg-Essen, Germany)

9.55   **Effect of valve and piston motion on the discharge coefficient in an exhaust port**
B. Semlitsch[1], Y. Wang[2], M. Mihaescu[1] (1 Royal Institute of Technology, Sweden; 2 Northwestern Polytechnical Univ., China)

10.20   Break

10.50   **Application of wall-layer models to LES of internal combustion engine flows**
T. Falkenstein, H. Pitsch (RWTH Aachen Univ., Germany)

11.15   **Adaptive LES of dynamically changing geometries in OpenFOAM®: an application to the TCC test case**
F. Piscaglia, A. Montorfano, A. Onorati (Politecnico di Milano, Italy)

11.40   **The influence of LES filter width on the turbulent in-cylinder flow**
T. Nguyen, A. Kempf (Univ. of Duisburg-Essen, Germany)

12.05   Lunch

13.45   **Comparison of LES SGS models in pipe flow**
D. H. Lee, B. Kucinschi, S. Nomura, O. Nitulescu, T. Shieh (Toyota Motor Engineering & Manufacturing North America, USA)

14.10   **LES for IC engine flows – effect of machine hardware, adaptive mesh refinement and sub-grid scale models**
X. Yang[1], S. Gupta[1,3], Q. Xue[2], S. Som[2], T-W. Kuo[1] (1 GM Global R&D, 2 Argonne National Lab., 3 Univ. of Michigan, USA)

14.35   **Prediction of cyclic combustion variability in internal combustion engines via coupled 1D-3D LES method**
B. Roux[1], J. Bohbot[1], Q. H. Tran[1], P. Sagaut[2] (1 IFPEN, 2 UPMC, France)

Session 2: Flow variability

15.00 **Comprehensive engine combustion characterization for LES validation**
B. Böhm, B. Peterson, E. Baum, C-P. Ding, A. Dreizler (TU Darmstadt, Germany)

15.25 **Cluster-based reduced-order modeling of a gasoline IC engine**
Y. Cao[1,2], E. Kaiser[1], J. Borée[1], B. R. Noack[1], L. Thomas[1], S. Guilain[2], A. Spohn[1]
(1 CNRS – Univ. of Poitiers, 2 Renault, France)

15.50 **LES of the cold flow of a DISI-Engine and validation with high-speed PIV measurements**
M. Theile[1,2], E. Hassel[1], D. Thévenin[2], B. Buchholz[3] (1 Univ. of Rostock, 2 Univ. of Magdeburg "Otto von Guericke", 3 FVTR, Germany)

16.15 Break

16.45 **Investigation of unsteady wall heat flux under engine relevant conditions using Direct Numerical Simulation**
M. Schmitt[1], C. E. Frouzakis[1], Y. M. Wright[1], A. Tomboulides[2], K. Boulouchos[1] (1 ETH Zürich, Switzerland; 2 Univ. of Western Macedonia, Greece)

17.10 **Separation of large-scale structures and turbulent fluctuations in IC Engines using POD-Based conditional averaging**
S. Buhl, F. Hartmann, M. Gauding, C. Hasse (TU Bergakademie Freiberg, Germany)

17.35 **LES of IC engine flows for different engine speeds and intake manifold pressures**
P. Schiffmann[1], S. Gupta[1,2], D. Reuss[1], V. Sick[1], X. Yang[2], T-W. Kuo[2] (1 Univ. of Michigan, 2 GM Global R&D, USA)

18.00 **An experimental and simulation study of turbulent flow in a homogeneous-charge spark-ignition engine**
Y Shekhawat[1], S. Paltrinieri[2], P. Schiffmann[3], D.C. Haworth[1], S. Fontanesi[2], V. Sick[3], D.L. Reuss[3] (1 Pennsylvania State Univ., USA; 2 UNIMORE, Italy; 3 Univ. of Michigan, USA)

18.25 **LES for the exploration of fast transients in downsized GDI SI engines – motored conditions**
C. Pera, G. Pilla, L-M. Malbec, S. Jay, C. Angelberger (IFPEN, France)

18.50 End of the presentations
Bus transfer to the *Brasserie Le Boeuf sur le toit*

20.00 Dinner

22.00 Bus departure to *Place Charles de Gaulle Etoile* in Paris then to Rueil-Malmaison near the hotels

Friday 5 December

Session 3: SI combustion

9.00 **Cycle-to-cycle variability of LES spark ignition modeling on a highly downsized DISI engine**
A. D'Adamo[1], S. Fontanesi[1], G. Cantore[1], M. Zellat[2] (1 UNIMORE, Italy; 2 CD-Adapco, UK)

9.25 **LES of a spark ignition engine using artificial thickening and flamelet generated manifolds**
C. He[1], E. Yildar[1], G. Künne[1], F. di Mare[2], A. Sadiki[1], J. Janicka[1] (1 TU Darmstadt, 2 German Aerospace Center, Germany)

9.50 **Influence of the tumble flow on the flame front propagation in a spark ignition engine**
P. Janas[1], B. Peterson[2], A. Kempf[1] (1 Univ. of Duisburg-Essen, 2 TU Darmstadt, Germany)

10.15 Break

10.45 **LES study on mixing and combustion in a direct injection spark ignition engine**
N. Iafrate[1], A. Robert[1], J-B. Michel[1], B. Cuenot[2] (1 IFPEN, 2 Cerfacs, France)

11.10 **Quantitative analysis of knock and auto-ignition/acoustic interactions in a downsized SIE using LES**
A. Robert[1], S. Richard[1], O. Colin[1], T. Poinsot[2] (1 IFPEN, 2 Cerfacs, France)

11.35 **A LES methodology based on reduced schemes to compute knocking in internal combustion engines**
A. Misdariis[1,2], O. Vermorel[2], T. Poinsot[3] (1 Renault, 2 Cerfacs, 3 IMFT, CNRS, France)

12.00 **LES of auto-ignition in a HCCI engine using a progress variable approach**
T. Breitenberger[1], E. Yildar[1], C. He[1], G. Künne[1], M-S. Benzinger[2], R. Schießl[2], F. di Mare[3], J. Janicka[1] (1 TU Darmstadt, 2 Karlsruhe Institute of Technology, 3 German Aerospace Center, Germany)

12.25 Lunch

Session 4: Injectors flows and sprays

14.00 **LES of gasoline spray**
J. Hélie (Continental Automotive France, France)

14.25 **LES of diesel sprays considering multi-injection averaging and grid-convergent mesh resolution**
G. Goldin[1], P. K. Senecal[1], E. Pomraning[1], K.J. Richards[1], S. Som[2] (1 Convergent Science Inc., 2 Argonne National Lab., USA)

14.50 LES of spray transients: start and end of injection phenomena
M. Battistoni[1,2], Q. Xue[1], S. Som[1] (1 Argonne National Lab., USA; 2 Univ. of Perugia, Italy)

15.15 Break

15.45 LES of in-nozzle flows and liquid jet atomization using a two-surfaces density model
C. Habchi[1], B. M. Devassy[2], R. Kumar[1] (1 IFPEN, France; 2 AVL List, Austria)

16.10 Assessment of LES-CMC simulations for spray a combustion
D. Farrace, Y. M. Wright, K. Boulouchos (Aerothermochemistry and Combustion Systems Lab. (LAV), Switzerland)

16.35 LES of the spray a using tabulated chemistry based on flamelet-generated manifolds
F. E. Hernández-Pérez[1], L. M. T. Somers[1], C. Angelberger[2] (1 Eindhoven Univ. of Technology, The Netherlands; 2 IFPEN, France)

17.00 Closing address

End of the conference