



30th International Symposium On Rarefied Gas Dynamics

University of Victoria, Victoria BC, Canada

July 10-15, 2016



University
of Victoria



Pacific Institute *for the*
Mathematical Sciences



University of Colorado
Colorado Springs

RGD 30 Organization Committee

Henning Struchtrup, University of Victoria, Victoria BC, Canada, struchtr@uvic.ca, 1-778-967-1064 (cell)

Andrew Ketsdever, University of Colorado, Colorado Springs, USA, aketsdev@uccs.edu

Bernie Shizgal, University of British Columbia, Vancouver, Canada, bshizgal@gmail.com

Conference e-mail: rgd30@uvic.ca

Administrator of the PIMS UVic Site:

Kristina McKinnon, Pacific Institute for the Mathematical Sciences, pims@uvic.ca

International Advisory Committee

T. Abe (Japan), K. Aoki (Japan), Y.A. Bondar (Russia), D. Bruno (Italy), R. Campargue (France), C. Day (Germany), J. Fan (China), J. M. Fernandez (Spain), A. Frezzotti (Italy), M.A. Gallis (USA), R. Gatignol (France), M.-A. Gaveau (France), M. Grabe (Germany), A. Ketsdever (USA), E. Knuth (USA), G.M. Kremer (Brazil), E.V. Kustova (Russia), D. Levin (USA), E.P. Muntz (USA), T. Niimi (Japan), A.K. Rebrov (Russia), B. Shizgal (Canada), H. Struchtrup (Canada), I. Wysong (USA)

Board of honor

V. Aquilanti, G. A. Bird, A. V. Bobylev, I. Boyd, M. Capitelli, A. L. Garcia, J. K. Harvey, L. J. F. Hermans, F. Huisken, J. A. Kunc, J.C. Lengrand, M. Mareschal, J. N. Moss, K. Nanbu, Y. A. Rijov, A. Santos, Y. Sone, T. Ytrehus

International Symposium on Rarefied Gas Dynamics

Rarefied Gas Dynamics (RGD) is a multidisciplinary field encompassing atomic and molecular physics, mathematics and computer simulation techniques. Its foundations trace back to the fathers of statistical mechanics, Ludwig Boltzmann and James Clerk Maxwell who opened a new path and established a link between the microscopic and macroscopic worlds.

Today, RGD is a fully mature discipline which not only provides a continuous source of challenging mathematical problems but also the basis for many applications including high altitude flight, plasma physics, microfluidics, gas-surface interaction, and many more.

The first symposium took place in Nice in 1958. Since then, researchers in the field meet every other year, alternating between Europe, Asia, Australia and the Americas.

RGD Symposia and Keynote Speakers

	City	Country	Harold Grad Lecture	Lloyd Thomas Lecture	Graeme Bird Lecture
RGD 30 (2016)	Victoria	Canada	R. Caflish (USA)	T. Minton (USA)	S. Succi (Italy)
RGD 29 (2014)	Xi'an	China	M. Pulvirenti (Italy)	A. Rebrov (Russia)	M. Gallis (USA)
RGD 28 (2012)	Zaragoza	Spain	J. Dufty (USA)	U. Buck (Germany)	B.J. Alder (USA)
RGD 27 (2010)	Pacific Grove	USA	F. Golse (France)	P.F. Barker (UK)	
RGD 26 (2008)	Kyoto	Japan	K. Aoki (Japan)	S. Montero (Spain)	
RGD 25 (2006)	St.-Petersburg	Russia	A.V. Bobylev (Sweden)	V.E. Fortov (Russia)	
RGD 24 (2004)	Monopoli	Italy	C. Villani (France)	V. Aquilanti (Italy)	
RGD 23 (2002)	Whistler	Canada	M.N. Kogan (Russia)	L.J.F. Hermans (Netherlands)	
RGD 22 (2000)	Sydney	Australia	B.J. Alder (USA)	C. Scott (USA)	
RGD 21 (1998)	Marseille	France	P.-L. Lions (France)	E.P. Muntz (USA)	
RGD 20 (1996)	Beijing	China	Y. Sone (Japan)	F.C. Hurlbut (USA)	
RGD 19 (1994)	Oxford	UK	G.A. Bird (Australia)	J.P. Toennies (Germany)	
RGD 18 (1992)	Vancouver	Canada	E.P. Muntz (USA)		
RGD 17 (1990)	Aachen	Germany	C. Cercignani (Italy)		

RGD 16 (1988): Pasadena (USA), **RGD 15** (1986): Grado (Italy), **RGD 14** (1984): Tsukuba Science City (Japan), **RGD 13** (1982): Novosibirsk (Russia), **RGD 12** (1980): Charlottesville (USA), **RGD 11** (1978): Cannes (France), **RGD 10** (1976): Aspen (USA), **RGD 9** (1974): Gottingen (Germany), **RGD 8** (1972): Palo Alto (USA), **RGD 7** (1970): Pisa (Italy), **RGD 6** (1968): Cambridge (UK), **RGD 5** (1966): Oxford (UK), **RGD 4** (1964): Toronto (Canada), **RGD 3** (1962): Paris (France), **RGD 2** (1960): Berkeley (USA), **RGD 1** (1958): Nice (France)

Emergency Phone numbers:

Ambulance/Fire/Police: [9-1-1](tel:911)

UVic Campus Security/First Aid: [250-721-7599](tel:2507217599)

Local Transport:

Taxis:

Bluebird Cabs: [778-402-7429](tel:7784027429)

Yellow Cab: [250-381-2222](tel:2503812222)

Public Buses (BC Transit):

CAD 2.50 Single boarding only – No Transfers, or CAD 5.00 for a Daypass.

Drivers do not carry change!

WiFi connection:

Conference SSID: **RGD30**, no password required

UVic is part of eduroam (<https://cat.eduroam.org/#>)

30th International Symposium on Rarefied Gas Dynamics

Victoria, BC, Canada
July 10-15, 2016

Final Program

The Symposium takes place at the University of Victoria, Victoria BC, Canada

Registration, Coffee Breaks and Lunches: Bob Wright Centre (lobby)

Talks: Bob Wright Centre B150 and A104, MacLaurin A144

Poster Session: Bob Wright Centre (lobby)

Program at a Glance

Sunday, July 10, 2016

16:00 - 19:00 Registration, Greet and Meet. Light snacks and soft drinks.

Monday, July 11, 2016

08:00 - 17:30: Conference, 18:30 - 22:00: Reception/Dinner @ Royal BC Museum, Victoria

Tuesday, July 12, 2016

08:20 - 18:30: Conference/Poster Session

Wednesday, July 13, 2016

08:20 - 13:00: Conference, Free Afternoon/Evening

Thursday, July 14, 2016

08:20 - 18:30: Conference/Poster Session, 18:30: Conference Dinner @ UVic University Club

Friday, July 15, 2016

08:20 - 16:30: Conference/Posters, 16:30: Farewell Party/Barbecue @ UVic Village Greens

Sunday, July 10		
Registration, Meet and Greet (Bob Wright Centre, Univ. of Victoria, 16:00 - 19:00)		

Monday, July 11			
Registration (BWC lobby) 08:00-08:30			
Bob Wright Centre BWC B150		Bob Wright Centre BWC A104	MacLaurin MAC A144
8:30	Introductory Remarks		
	Session 1: DSMC Development Session Chair: M. Gallis	Session 2: Moment Equations I Session Chair: J. McDonald	Session 3: Micro-channel Flow Session Chair: A. Alexeenko
9:00	Deschenes , Grot, Cline, "Development of the ARISTOTLE Webware for Cloud-Based Rarefied Gas Flow Modeling"	(INVITED) Torrilhon , "Modeling Rarefied Gas Flow Based on Moment Equations"	Croizet , Gatignol, "Asymptotic Modeling of the Axisymmetric Flow of a Thermal Binary Gas Mixture in a Circular Microchannel"
9:20	Klothakis , Nikolos, Koehler, Gallis, Plimpton, "Validation Simulations of the DSMC code SPARTA"		Gatignol , Croizet, , "Asymptotic Modeling of Flows of a Mixture of Two Monoatomic Gases in a Coplanar Microchannel"
9:40	Kashkovsky, Shevyrin, Molchanova, Bondar , "Implementation of the real gas effects models in SMILE-GPU DSMC numerical tool"	Mohammadzadeh , Struchtrup, "Modeling Thermal Transport over Micron Distances in a Silicon Membrane"	Wang , Xu, Xu, Qian, "Onsager's Cross Coupling Effects in Gas Flows Confined to Micro-channels"
10:00	Liechty, Burt , "Extension of the Viscous Collision Limiting Direct Simulation Monte Carlo Technique to Multiple Species"	Tensuda , Groth, McDonald, "Multi-Dimensional Validation of a Maximum-Entropy-Based Interpolative Moment Closure"	Gavasane, Bhandarkar, Agrawal, Pradeep, "Study of Rarefied Gas Flow in Suddenly Expanded Microchannel"
10:20	Coffee Break (BWC lobby)		
	Session 4: 3rd Graeme Bird Lecture Session Chair: H. Struchtrup		
11:00	S. Succi , " <i>Lattice Boltzmann Beyond Navier-Stokes Hydrodynamics: Where Do We Stand?</i> "		
12:20	Lunch (BWC lobby)		
	Session 5: DSMC Applications I Session Chair: D. Levin	Session 6: Moment Equations II Session Chair: M. Torrilhon	Session 7: Flows Through Porous Media Session Chair: S. Takata
13:40	Gallis , Koehler, Torejzyski, Plimpton, "Direct Simulation Monte Carlo Investigation of Hydrodynamic Instabilities in Gases"	(INVITED) McDonald , "Approximate Maximum-Entropy Moment Closures for Gas Dynamics"	Kawagoe , Yonemura, "Modeling of Pressure-Driven Gas Transport Through Micro/Nano-Scale Porous Media"
14:00	John, Gu, Barber, Emerson , "On the Inverse Magnus Effect for Flow Past a Rotating Cylinder"		Jambunathan, Levin , "Grid-Free DSMC Simulations of Flow Through Porous Media"
14:20	Çelenligil , "Heat Transfer Simulation of Rarefied Laminar Flow Past a Circular Cylinder "	Laplante , Groth, "Comparison of Maximum Entropy and Quadrature-Based Moment Closures for Shock Transitions Prediction in One-Dimensional Gaskinetic Theory"	Matsumoto, Nakaye, Sugimoto , "Gas Separation by the Molecular Exchange Flow Through Micropores of the Membrane"

14:40	Reschke , Binder, Kleinert, Mirza, Nizenkov, Pfeiffer, Fasoulas, Copplestone, Ortwein, Munz, "Recent Developments of DSMC within the Reactive Plasma Flow Solver PICLas"	Collyer, Lockerby , "Derivation and Application of Fundamental Solutions to Grad's Linearised Moment Equations"	Ho, Wu, Zhang , "Direct Simulation of Gas Transport in Porous Media"
15:00	Coffee Break (BWC lobby)		
	Session 8: Fokker-Planck Equation Session Chair: J.-P. Boeuf	Session 9: Jets and Plumes Session Chair: I. Wysong	Session 10: Micro Scale Flows and Devices I Session Chair: R. Gatignol
15:40	Shizgal , "Time Dependent Solution a Fokker-Planck Equation with Equilibrium Bistable States; Eigenvalue Spectrum and the Approach to Equilibrium"	Grabe , Dettleff, Hannemann, "Impact of Nozzle Separation on the Plumes of two Parallel Thrusters"	(INVITED) Alexeenko , "Microdevices Enabled by Rarefied Flow Phenomena"
16:00	Gorji , Torrilhon, "Collision Frequency Closure for Fokker-Planck Model of Hard Sphere Gases"	Araki , "Fast Computation of High Energy Elastic Collision Scattering Angle for Electric Propulsion Plume Simulation"	
16:20	Mathiaud , Mieussens, "A Fokker-Planck Model of the Boltzmann Equation with Correct Prandtl Number"	Woronowicz , "Column Number Density Expressions Through M = 0 and M = 1 Point Source Plumes Along Any Straight Path"	Deschenes , Grot, "Prediction of Rarefied Micro-Nozzle Flows using the SPARTA Software"
16:40	Fei , Liu, Zheng, "A Multi-scale Method for Rarefied and Continuum Gas Flows Based on Fokker-Planck Model"	Rebrov , Yudin, "Non-Equilibrium Processes by a Gas Phase Synthesis of Diamond"	Shah, Gavasane, Agrawal, Bhandarkar , "Selection of DSMC Parameters for Reducing Computational Expense in Simulation of 3D Microchannel Flows"
17:00			Roohi , Stefanov, "On the Accuracy of the SBT Collision Algorithm in Nanoflows and Hypersonic Regime"
17:30	Buses Leave to Reception		
18:30	Reception at Royal BC Museum, downtown Victoria		
21:00	First Buses Leave Back to University of Victoria		
22:00	Reception Ends, Last Buses Back to University of Victoria		

Tuesday, July 12

	Bob Wright Centre BWC B150	Bob Wright Centre BWC A104	MacLaurin MAC A144
	Session 11: DSMC in Hypersonic Flows Session Chair: S. O'Byrne	Session 12: Numerical Methods I Session Chair: S. Succi	Session 13: Plasma Applications Session Chair: S. Baalrud
8:20	Zuppardi , "Aerodynamic Characterization of the Jet of an Arc Wind Tunnel"	Koellermeier , Torrilhon, "Numerical Convergence Study of Hyperbolic Moment Models in Partially-Conservative Form"	(INVITED) Graves , "Plasma Biomedecine"
8:40	Prakash , Gai, O'Byrne, "DSMC Computations of Hypersonic Flow Separation and Re-attachment in the Transition to Continuum Regime"	Sagert , Even, Strother, "Shock Wave and Fluid Instability Simulations at Different Knudsen Numbers with a Kinetic Particle Approach"	
9:00	Torres , Magin, Bondar, "Uniform Rovibrational Collisional N ₂ Bin Model for DSMC With Application to Atmospheric Entry Flows"	Brull, Forestier-Coste, Mieussens , "Local Velocity Grids for Deterministic Simulations of Rarefied Flows in Two Dimensions"	Scoggins , Magin, "Crossed Contributions to Electron and Heavy Particle Transport Fluxes for Magnetized Plasmas in the Continuum Regime"
9:20	Wysong , Gimelshein, "Numerical Analysis of Thermal and Chemical Nonequilibrium in Dissociating Oxygen Shock Waves"	Bernhoff , "Discrete Velocity Models for Multicomponent Mixtures and Polyatomic Molecules without Nonphysical Collision Invariants and Shock Profiles"	Orlac'h , Cabarrocas, Novikova, Giovangigli, "Hybrid Kinetic/Fluid Modeling of Silicon Nanoparticles Dynamics in Silane Plasma Discharges"
9:40	Tumuklu , Levin, Gimelshein, Austin, "Factors Influencing Flow Steadiness in Laminar Boundary Layer Shock Interactions"	Mirza, Nizenkov , Fasoulas, "Flow Simulation around a 70-Degree Blunted Cone with Two Particle Methods in a Wide Knudsen Number Range"	Hong , Yuan, Fu, Wei, "The Preserving Neutron Flux Properties Discrete Scheme for Multi-media Time-dependent Neutron Transport Equations"
10:00	Coffee Break (BWC lobby)		
	Session 14: 12th Lloyd Thomas Lecture Session Chair: A. Ketsdever		
10:40	T. Minton , "Dynamics of Energetic Gas Surface Collisions"		
12:00	Lunch (BWC lobby)		
	Session 15: Gas Surface Interactions I Session Chair: A. Rebrov	Session 16: Numerical Methods II Session Chair: Y. Bondar	Session 17: Plasma Flows and Processes Session Chair: D. Graves
13:20	Kihara , Kotsubo, Yoshimoto, Kinefuchi, Takagi, "Incident Energy Dependence of Scattering Behavior of Water Molecules on Si (100) and Graphite Surfaces"	Liang , Li, Li, Du, Fang, "An Efficient Collision Limiter Monte Carlo Simulation for Hypersonic Near Continuum Flows"	(INVITED) Boeuf , "Negative Ion Production and Extraction for the Neutral Beam Injection System of ITER"
13:40	Mehta, Levin , Murray, Minton, "Study of Non-Reactive Scattering from Graphene Using Beam Experiments and Molecular Dynamics"	Kuechlin , Jenny, "Fokker-Planck-DSMC Algorithm for Simulations of Rarefied Gas Flows: Parallel Implementation and 3D Simulations"	
14:00	Nakauchi , Mabuchi, Kinefuchil, Takeuchi, Tokumasu, "Scattering Dynamics of Oxygen Molecules of Nafion Membrane"	Espinoza , Scanlon, Brown, "An Open Source Hybrid CFD-DSMC Solver for High-Speed Flows"	Pfeiffer, Binder , Fasoulas, Copplestone, Munz, "Comparison of Plasma Plume Expansion Simulations Using Fully Kinetic Electron Treatment and an Electron Fluid Model"

14:20	Aoki, Giovangigli , Hattori, "A Kinetic Model of Adsorption on Solid Surfaces"	Aristov , Ilyin, "Kinetic Approach for Describing Biological Systems"	Foletto, Pitchford , Puech, Fontane, Joly, "Visualization of a Helium Jet in Open Air, With and Without Ignition of a Plasma"
14:40	Coffee Break (BWC lobby)		
15:00	Session 18: Gas Surface Interactions II Session Chair: T. Minton	Session 19: DSMC Applications II Session Chair: A. Alekseenko	Session 20: Numerical Methods in Plasmas Session Chair: R. Caflisch
15:20	Yamaguchi , Tatsuno, Matsuda, Niimi, "Measurement of Energy Accommodation Coefficient for Binary Gas Mixtures of Noble Gases"	Bruno , Frezzotti, Ghiroldi, "DSMC Simulation of Rayleigh-Brillouin Scattering in Binary Mixtures"	Wilkening , Cerfon, Landreman, "Symmetric Pseudo-Spectral Velocity Discretization Schemes for Kinetic Equations with Energy Diffusion in Plasma Physics"
15:40	Maldonado , Rodrigues, Ketsdever, "Material Exposure Effects in a Simulated Low-Earth Orbit Environment"	Bariselli , Torres, Magin, "State-Specific Catalytic Recombination Boundary Condition for DSMC Methods in Aerospace Applications"	Istomin , Kustova, "Effect of Electronic Excitation on High-Temperature Flows of Ionized Nitrogen and Oxygen Mixtures behind Strong Shock Waves"
16:00	Aksenova , Khalidov, "Analytic Model of the Effect of Poly-Gaussian Roughness"	Pan , Stephani, "Investigation of Velocity-Space Coupling Approach in DSMC for Tail-Driven Processes"	Sandoval-Villalbaz , Sagaceta-Mejía, "Statistical Foundations of Kaluza's Magnetohydrodynamics I: Euler's Regime"
16:20	Kon , Kobayashi, Watanabe, "Molecular Simulation of Evaporation Mass Flux during Net Evaporation/Condensation"	Karchani , Myong, "Computational Investigation of Free-Molecular Gas Flows Using DSMC and CFD"	Sagaceta-Mejía , Sandoval-Villalbaz, García-Perciante, "Statistical Foundations of Kaluza's Magnetohydrodynamics II: Navier-Stokes Regime"
16:40	Ganapol , "Poiseuille Channel Flow by Doubling"	Tumuklu , Levin, Gimelshein, Austin, "Modeling of Near-Continuum Laminar Boundary Layer Shocks Using DSMC"	García-Perciante , Sandoval-Villalbaz, Brun-Battistini, "Relativistic Transport Coefficients for a Single Component Charged Gas in the Presence of an Electromagnetic Field: Kinetic Theory Approach Within a BGK-type Model"
17:00	Poster Session (BWC lobby), snacks and soft drinks		

Poster Session, Tuesday, July 12, 2016

Session Chair: M. Celenligil

Session P1: Space Vehicle Aerodynamics

- | | |
|---|--|
| 1 | Pekardan, Alexeenko , "Thermal Lift Generation and Drag Reduction in Rarefied Aerodynamics" |
| 2 | Jin, Huang, Shi, Cheng, "DSMC Simulation for Effects of Angles of Attack on Rarefied Hypersonic Cavity Flows" |
| 3 | Jin, Huang, Hu, Cheng, "Fast and Accurate Prediction for Aerodynamic Forces Acted on Satellites Flying in Low-Earth Orbit" |
| 4 | Fei , Xu-hong, Xiao-wen, Xiao-li, "Impact of Martian Atmosphere Parameters Uncertainties on Entry Vehicles Aerodynamics for Hypersonic Rarefied Conditions" |
| 5 | Oh , Lee, "Aerodynamics Characteristics of the Upper Stages of a Launch Vehicle in Low-Density Regime" |
| 6 | Xiao-wen , An-long, Wei-jiang, Chun-qun, "Investigation of Bridging Method to Predict Rarefied Aerodynamics of Mars Entry Capsules" |

Session P2: DSMC Applications and Development

- | | |
|---|--|
| 7 | Morozov, Plotnikov, Rebrov , Yudin, "DSMC Study of Hydrogen and Methane Flows in a Hot Tube" |
| 8 | Molchanova, Kustova, Kashkovsky, Bondar , "DSMC Modelling of CO ₂ Vibrational and Dissociation Kinetics" |

Session P3: Plumes and Jets

- | | |
|----|--|
| 9 | Varoutis , Day, "Simulation of Gas Mixture Flow Impingement on a Flat Absorbing Cryogenic Disc" |
| 10 | Bykov, Gorbachev, Zakharov , "Simulation of Small Clusters Formation in Water Vapor Plumes" |
| 11 | Ji, Sun , "3D Kinetic Simulation of Near-Field Plume Flows from an Anode-Layer Hall Thruster" |

Session P6: Numerical Methods

- | | |
|----|--|
| 18 | Saveliev , Yonemura, Kawagoe, "Rarefied Gas Simulations Using Quasiparticle Pairs" |
| 19 | Kolobov, Arslanbekov, "Mesh-Based and Particle-Based Kinetic Solvers with Adaptive Cartesian Mesh" presented by Aristov |
| 20 | Tatsios , Valougeorgis, "Extension of Deterministic Steady-State Marching Kinetic Solvers to Unstructured Grids" |
| 21 | Liu, Zhao , Chen, "Burnett Simulations of Micro-Couette Flow using Modified Slip Boundary Conditions" |
| 22 | Kunova , Kustova, Mekhonoshina, Shoen, "Numerical Simulation of Coupled State-to-State Kinetics and Heat Transfer in Viscous Non-Equilibrium Flows" |
| 23 | Abramov, Butkovskii , "On the Unsteady-state Couette Problem in the Transitional Regime" |

Session P7: Heat and Mass Transport

- | | |
|----|--|
| 24 | Kustova , Nabokova, Kjelstrup, Bedeaux, "Heat and Mass Transfer in Reacting Mixtures: Molecular Dynamics and Kinetic Theory Approaches" |
| 25 | Schuebler , "A Thermodynamic View of Heat Transfer in Different Transport Regimes" |
| 26 | Schuebler , Ozturk, Sisman, "Quantum Degeneracy Effect on Gas Diffusion" |
| 27 | Moratto, Kremer , "Thermal Conductivity, Shear and Bulk Viscosities for a Relativistic Binary Mixture" |

Session P4: Nonequilibrium Flows

12	Shao, Zhao , Chen, "One-Dimensional Nonequilibrium Shock Wave Structure Analysis"
13	Chacón-Acosta , "Equilibrium and Non-equilibrium Properties of a Relativistic Gas at the Transition Temperature"
14	Chen, Wang , Yu, "General Reynolds Analogy on Curved Surfaces in Hypersonic Rarefied Gas Flows with Non-equilibrium Chemical Reacting"
15	Kunova , Kustova, Mekhonoshina, Shoev, "Numerical Simulation of Coupled State-to-State Kinetics and Heat Transfer in Viscous Non-Equilibrium Flows"

Session P5: Experimental Methods

16	Bosworth, Ketsdever , "Measurement of Thermophoretic Force on Spheroids"
17	Bosworth, Ketsdever , "Determination of the Effect of Particle Thermal Conductivity on Thermophoretic Force"

Session P8: RGD Applications

28	Agosseme, d'Almedia, Gatignol , "Study of a Flow in a Plane Micro-Channel Using a Discrete Spatial Model of Gas"
29	Zhao , Jiang, Chen, "Computation of 1-D Shock Structure Using Nonlinear Coupled Constitutive Relations and Generalized Hydrodynamic Equations"
30	Boyson, Kaseman, Aizengendler, O'Byrne , Krishna, "Emission Spectroscopy with an Embedded Sensor for the Study of Metallic Contamination in the T-ADFA Free Piston Shock Tunnel"
31	Kungurtsev, Shevyrin, Bondar , Kashkovsky, Shneider, Gimelshein, "Non-resonant Gas-Optical Lattice Interaction with Feedback from the Gas to the Laser Radiation"

Wednesday, July 13

	Bob Wright Centre BWC B150	Bob Wright Centre BWC A104	MacLaurin MAC A144
	Session 21: RGD in Planetary Science Session Chair: J.-P. St. Maurice	Session 22: Reaction and Relaxation Processes Session Chair: E. Kustova	Session 23: Experimental Methods in RGD Session Chair: M. Grabe
8:20	Hoey , Trafton, Goldstein, Varghese, Ackley, "DSMC Simulation of Io's Unsteady Tvashtar Plume"	Le , Yan, Caflisch, Cambier, "Coarse-Grained Monte Carlo Simulation of Excitation and Ionization Collisions"	Fowee, Strongrich , Alexeenko, "Studies of a Thermostress Convection-Based Actuator"
8:40	Parkos, Pikus , Alexeenko, Melosh, "HCN Production from Impact Ejecta on the Early Earth"	Kustova , Savelev, Sharafutdinov, "Improvement of Simple Models for State-to-State and Multi-Temperature Reaction Rate Coefficients"	Bhiladvala , "Developing Experiments with Nanomechanical Resonators to Probe Rarefied Gas Dynamics"
9:00	Dias , Bariselli, Turchi, Frezzotti, Magin, "Development of a Melting Model for Meteors"	Zhu , Li, Levin, "Coarse-Graining of N ₂ -N Relaxation Collisions Using 2-D Bins"	Kaseman, Page, Kleine, O'Byrne , Gai, "Comparison Of Density-Sensitive and Fluorescence Visualization in Low-Density Separated Flow"
9:20	Rodionov, Zakharov , Crifo, "The RCZ Model for Prediction of the Gas Environment of the PHILAE Probe During Its 2014 Descent to the Nucleus of the Comet 67P"	Schwartzentruber , Singh, Valentini, "Nonequilibrium Dissociation from Ab-Initio Calculations"	Vedernikov , Balapanov, Beresnev, "Microgravity Experiments in Rarefied Gas Dynamics"
9:40	Volkov , "Comparison of Hydrodynamic and Kinetic Models of Thermal Escape from Planetary Atmospheres"	Sebastiao, Kulakhmetov, Alexeenko , "Comparison Between Phenomenological and Ab-Initio Reaction and Relaxation Models in DSMC"	Lietard, Poisson, Gaveau , Mestdagh, "Characterization of a Seeded Pulsed Molecular Beam Using the Velocity Map Imaging Technique"
10:00	Reddy , Alam, "Plane Shock Wave Structure in a Dilute Granular Gas"	Luo, Kulakhmetov, Alexeenko , "Calculation of State-Resolved Cross-Sections for the N ₂ (X ¹ Σ ⁺ g)+O(3P) →N(4S)+NO(X ² Π) Zeldovich Reaction"	Hemadri , Biradar, Garg, Bhandarkar, Agrawal, "Investigation into the anomalous Nusselt number in the Slip Flow Regime"
10:20	Coffee Break (BWC lobby)		
	Session 24: RGD in Astrophysics Session Chair: T. Magin	Session 25: Space Vehicle Aerodynamics Session Chair: E. Knuth	Session 26: Molecular Dynamic Simulations Session Chair: A. Frezzotti
10:40	(INVITED) St. Maurice , "Ion Velocity Distributions in the Ionosphere"	White , Scanlon, Merrifield, Kontis, Langener, Alves, "Numerical and Experimental Capabilities for Studying Rocket Plume-Regolith Interactions"	Barbante, Frezzotti , "Simulations of Condensation Flows Induced by Reflection of Weak Shocks from Liquid Surfaces"
11:00		Taguchi , "Lift Acting on a Spinning Sphere in a Slow Flow of a Rarefied Gas"	Kobayashi , Sasaki, Kon, Fujii, Watanabe, "Molecular Dynamics Simulation on Kinetic Boundary Conditions of Gas-Vapor Binary Mixture"
11:20	Yau , Shizgal, Howarth, "Hot Oxygen Geo-Corona in the Topside Ionosphere"	Nizenkov , Fasoulas, Noeding, Konopka, Reimann, "Numerical Investigation of the Aerodynamics of the REX-Free Flyer in the Rarified Gas Regime"	Tsuji , Iseki, Hanasaki, Kawano, "Molecular Dynamics Study of Force Acting on a Model Nano Particle Immersed in Fluid with Temperature Gradient: Effect of Interaction Potential"

11:40	Méndez , García-Perciante, Sandoval-Villalbaz, "Fluctuation Dynamics and Structure Formation in a Dissipative Relativistic Dilute Gas: The Static Background Case"	Binder , Boldini, Romano, Herdrich, Fasoulas, "Transmission Probabilities of Rarefied Flows in the Application of Atmosphere-Breathing Electric Propulsion"	Andric , Jenny, "Molecular Dynamics Investigation of Energy Redistribution During Gas-Surface Collisions"
12:00	Kremer , "Analysis of Jeans Instability from the Boltzmann Equation"	Capon , Brown, Boyce, "Charged Aerodynamics of a Low Earth Orbit Cylinder"	Takeuchi , "Scattering Properties of Gas molecules on Self- Assembled Monolayers Using Molecular Dynamics Simulation"
12:20	(INVITED) Pierrard , "Kinetic Models for Space Plasmas"	Burt , Josyula, "A Green-Kubo Approach to Reduce Collision Separation Error in the Direct Simulation Monte Carlo Method"	
12:40			
13:00		Free Afternoon to Explore Victoria	

Things to do:

<http://www.tourismvictoria.com/things-to-do/>

<http://www.tourismvictoria.com/things-to-do/attractions/>

Thursday, July 14

	Bob Wright Centre BWC B150	Bob Wright Centre BWC A104	MacLaurin MAC A144
	Session 27: Boltzmann and Related Equations I Session Chair: K. Aoki	Session 28: Slip Flow Regime Session Chair: M.-A. Gaveau	Session 29: Numerical Methods II Session Chair: D. Lockerby
8:20	(INVITED) Dimarco , "Fast Numerical Methods for Rarefied Gas Dynamics Simulations"	Takata , Hattori, Hasebe, "Slip/Jump Coefficients and Knudsen-Layer Corrections for the ES Model in the Generalized Slip-Flow Theory"	Soderholm , "On Boundary Conditions for Regularized Burnett Equations"
8:40		Aksenova, Khalidov , "Unstable Rarefied Gas Flow Conditions in a Channel"	Jiang , Zhao, Chen, "A Three-Dimensional Finite Volume Method for Conservation Laws in Conjunction with Modified Nonlinear Coupled Constitutive Relations"
9:00	Haack , Murillo, Hauck, "A New Conservative Multi-species BGK Model"	Groll , Gomez, "Microproduction Inaccuracy Analysis using Knudsen Number Depending Correction Functions"	Babovsky , Grabmeier, "Calculus and Design of Discrete Velocity Models Using Computer Algebra"
9:20	Alekseenko , Cholvin, "On Deterministic Evaluation of the Boltzmann Collision Operator on Octrees in O(N ²) Operations"	Peraud , Hadjiconstantinou, "Solid-state Heat Transfer in the Slip and Early Transition regime. An Asymptotic Theory"	Wu , Zhang, "Solving the Enskog Equation by the Fast Spectral Method"
9:40	Rovenskaya, Aristov , "Numerical Simulation of Flow around Rectangular Cylinders Using Boltzmann Equation"	Tsukamoto , Sakurai, Iwatsu, "Molecular Kinetic Approach to Acoustic Waves in Compressible Boundary Layer Flow"	Junxia , Shulin, Jie, Zhenying, Yibing, "A Discontinuous Finite Element Method For Neutron Transport Equations on 3-D Unstructured Grids"
10:00	Coffee Break (BWC lobby)		
	Session 30: 14th Harold Grad Lecture Session Chair: B. Shizgal		
10:40	R. Caflisch , "Accelerated Simulation Methods for Rarefied Gases and Plasmas"		
12:00	Lunch (BWC lobby)		
	Session 31: Numerical Methods III Session Chair: P. Varghese	Session 32: Plasma Flows and Processing Session Chair: V. Pierrard	Session 33: Nonequilibrium Flows I Session Chair: E. Roohi
13:20	Aristov , Ilyin, Kolobov, Arslanbekov, "A Hybrid Solver for Rarefied-Continuum Flows Using Discrete Velocities and Lattice Boltzmann Methods"	(INVITED) Baalrud , "Effective Potential Kinetic Theory for Strongly Coupled Plasmas"	Sirmas , Radulescu, "Continuum Modelling of Shock Waves Through Granular Gases and the Role of Statistical Fluctuations"
13:40	Alekseenko , Gimelshein, Nguyen, "A BGK-type Model with Enforced Relaxation of Moments for Non-Continuum Flows"		Armenise, Kustova , "Sensitivity of Heat Fluxes in Hypersonic CO ₂ Flows to the State-to-state Kinetic Schemes"
14:00	Dubois , Graille, Lallemand, "Recovering the Full Navier Stokes Equations with Lattice Boltzmann Schemes"	Liu , Xu, "A Unified Gas Kinetic Scheme for Plasma Simulation"	Kustova, Kremer , "Influence of State-to-State Vibrational Distributions on Transport Coefficients of a Single Gas"
14:20	Xu , "Direct Modeling for Computational Fluid Dynamics"	Zhang , Gamba, "Deterministic Conservative Solver for the Inhomogeneous Fokker-Planck-Landau Equation Coupled with Poisson Equation"	Aristov , Frolova, Zabelok, "Problems for Kinetic Equation with Nonequilibrium Boundary Conditions and Possible Tests"
14:40	Coffee Break (BWC lobby)		

	Session 34: Boltzmann and Related Equations II Session Chair: G. Dimarco	Session 35: Re-Entry Flows Session Chair: D. Goldstein	Session 36: Evaporation and Condensation Session Chair: G. Kremer
15:20	Estes, Varghese , Goldstein, "Lid-Driven Cavity Flow using a Discrete Velocity Method for Solving the Boltzmann Equation"	(INVITED) Magin , "Atmospheric Entries of Meteors"	Inaba , Yano, "Half-Space Problem of Unsteady Evaporation and Condensation of Polyatomic Gas"
15:40	Li , Peng, Jiang, Hou, "Implicit GKUA for Computable Modeling of Boltzmann Equation and Multi-Body Flows in Various Flow Regimes"		Struchtrup , Frezzotti, "Evaporation/Condensation Boundary Conditions for the Regularized 13 Moment Equations"
16:00	Alekseenko , Nguyen, Wood, "Deterministic-Stochastic Approach to Evaluate the Boltzmann Collision Operator in O(MN) Operations"	Baranger , Hérourard, Mathiaud, Poustis, Mieussens, "Modeling, Numerical Method and Validation for the Simulation of Rarefied Flows for Reentry"	Babovsky , "Discrete Velocity Models: Bifurcations, Hydrodynamic Limits and Application to an Evaporation Condensation Problem"
16:20	Kosuge, Aoki , Goto, "Shock Wave Structure in Polyatomic Gases: Numerical Analysis using a Model Boltzmann Equation"	Borner , Stephani, Panerai, Mansour, "A DSMC Surface Chemistry Model for Carbon-Based Ablators"	Yang , Hang, "A Coupling Simulation for the Radiative Transfer Problem Based on the Domain Decomposition Method"
16:40	Aoki, Baranger, Hattori, Kosuge, GMartalò, Mathiaud, Mieussens , "Slip and Jump Boundary Conditions for the Compressible Navier-Stokes Equations Based on an Asymptotic Analysis of the Boltzmann Equation"	Palharini , Azevedo, "Assessment of Rarefaction Effects on the SARA Capsule"	
17:00	Baranger, Congedo, Martalò , Mathiaud, Mieussens, "Numerical Computation and Validation of Extended Boundary Conditions for Navier-Stokes Equations"	Istomin , Kustova, "State-to-State Kinetics and Transport Properties of Electronically Excited N and O Atoms"	
17:20	Posters Available for Viewing		
18:30	Symposium Dinner, University Club, University of Victoria		

Friday, July 15

	Bob Wright Centre BWC B150	Bob Wright Centre BWC A104	MacLaurin MAC A144
	Session 37: Micro Scale Flows and Devices II Session Chair: T. Niimi	Session 38: Hypersonics Session Chair: T. Ozawa	Session 39: Molecular Collisions Session Chair: D. Emerson
8:20	Kugimoto , Hirota, Kizaki, "Motionless Heat Pump – A New Application of Thermal Transpiration"	Ozawa , Suzuki, Fujita, "Pitot Pressure Analyses in CO ₂ Condensing Rarefied Hypersonic Flows"	Martin, Araki , "Conservative Bin-to-Bin Fractional Collisions"
8:40	Yamada , Kawagoe, Yonemura, "Numerical Analysis of Thermal Creep Flow Induced Around Ratchet Structure"	Voelkel , Raman, Varghese, "Analysis of Steady Hydrogen-Air Detonation Waves with Vibrational Nonequilibrium"	Tatsios , Valougeorgis, Stefanov, "Implementation of the DSMC Decomposition Into Ballistic and Collision Parts to Some Classical Rarefied Flows"
9:00	Shahbi, Roohi , Baier, Hardt, "On the Radiometric Flow in a Ratchet-Channel Nano-Pump"	Casseau , Scanlon, Brown, "Hypersonic Reacting Flow Simulations using the hy2Foam Open-Source Two-Temperature CFD Solver"	Brechtken , "A Framework for Direct, Normal, High Order Approximations of Boltzmann's Collision Operator"
9:20	Pikus , Sebastiao, Strongrich, Alexeenko, "DSMC Simulation of Microstructure Actuation by Knudsen Thermal Forces in Water Vapor Mixtures"	Higdon , Goldstein, Varghese, "Sensitivity Analysis of DSMC Parameters for a Radiating 11-Species Air Hypersonic Flow"	Baykov, Bayalina, Kustova, Oblapenko , "Inverse Laplace Transform as a Tool for Calculation of State-specific Cross Sections of Inelastic Collisions"
9:40	Yonemura , Kawagoe, Yamada, "A Study of Transport of a MicroScale Object Due to the Knudsen Force"	AiGuo , DaWei, ZhengYi, yanGuang, ZhenQian, "Investigation on Critical Pressure Ratio of Hypersonic Low-density Wind tunnel Vacuum System"	
10:00	Coffee Break (BWC lobby)		
	Session 40: Kinetic Approaches Session Chair: Q. Sun	Session 41: Vacuum Gas Dynamics Session Chair: C. Day	Session 42: Non-Equilibrium Flows II Session Chair: D. Bruno
10:40	Li , Li, Fu, Xu, "The High Performance Parallel Algorithm for Inifed Gas-Kinetic Scheme"	Luo , Day, "Transmission Probability and Active Pumping Ability of the Channel with Moving Partition Plane"	Kustova, Oblapenko , "Vibration-Dissociation Coupling in Multi-Temperature Viscous Gas Flows"
11:00	Saveliev , "Quasiparticle Pairs in Kinetic Theory"	Matsumoto , Yamagishi, Morokuma, Mihara, "Study on a Gas Transport System Based on Thermal Induced Flow"	Christou , Dadzie, "Non-Equilibrium Heat Transfer in a Cavity Flow in Rarefied Regime"
11:20	Sarna , Torrilhon, "Moment Equations for a Reactive Quaternary Gaseous Mixture"	Gao , Sheehe, O'Byrne, "Measurement of Gas Viscosity using Photonic Crystal Fiber"	Kunova , Nagnibeda, Sharafutdinov, "Non-equilibrium Reaction Rates in Air Flows Behind Shock Waves. State-to-state and Three-temperature Description"
11:40	Sun, Jiang, Xu , "An Asymptotic Preserving Implicit Unified Gas Kinetic Scheme for frequency-dependent Radiative Transfer Equations"	Brieda , "Molecular Contamination Modeling with CTSP"	Wang , "Heat Transfer in Nonequilibrium Boundary Layer Flow past a Partly Catalytic Wall"
12:00		Taguchi , Suzuki, "Drag Acting on a Spherical Particle: Numerical Analysis of a Fundamental Problem and Its Application"	Yang, Sun , "Microscopic Analysis of the Combustion Induction Period in Auto-Ignition at Low Temperature"
12:20	Lunch (BWC lobby)		

	Session 43: Heat and Mass Transport Session Chair: Y. Zhang	Session 44: Moment Equations III Session Chair: V. Giovangigli	Session 45: Non-Equilibrium Flows III Session Chair: H. Babovsky
14:00	Christou , Dadzie, "An Investigation of a Mixed Convection in a Rarefied Gas"	Timokhin , Struchtrup, Kokhanchik, Bondar, "The Analysis of Different Variants of R13 Equations Applied to the Shock-Wave Structure"	Su , Bruno, Babou, "Vibrational Specific Simulation of Nonequilibrium Radiation from Shock-Heated Air"
14:20	Cheng , Dai, Li, Cheng, Lai, "Convective Heat Transfer to a Flat Plate in Rarefied High Mach Number Flow"	Aregba-Driollet, Brull , Dubroca, Guisset, "M1 for Rarefied Gas Dynamics"	Kustova, Mekhonoshina , "Similarity Criteria in Vibrationally and Electronically Excited Gases "
14:40	Rahimi , Struchtrup, "Polyatomic Gases; Macroscopic Boundary Conditions and Heat Conduction Analysis"	Groth , Lam, "Efficient and Accurate Numerical Solution of Moment Closures Describing Three-Dimensional Non-Equilibrium Flows"	Li , Li, Alldredge, "Approximating the M2 Method for Radiative Transfer in Slab Geometry"
15:00	Peraud , Hadjiconstantinou, "Adjoint Formulations for Accelerating Monte Carlo Simulations"		
16:30	Farewell Party, University of Victoria, Village Greens		

RGD 30 Participants

Olga	Aksenova	St.-Petersburg Naval Polytechnic University	olga.a.aksenova@gmail.com	St.-Petersburg	Russia
Alexander	Alekseenko	California State University Northridge	alexander.alekseenko@csun.edu	Northridge, CA	USA
Alina	Alexeenko	Purdue University	alexeenk@purdue.edu	West Lafayette, IN	USA
Sergey	Alyabyshev	Post-Doctoral Fellow University of Toulouse (Paul Sabatier)	salyabyshev@gmail.com	Toulouse	France
Nemanja	Andric	ETH Zurich	andricn@ifd.mavt.ethz.ch	Zurich	Switzerland
Kazuo	Aoki	National Taiwan University	kazuo.aoki.22v@st.kyoto-u.ac.jp	Kyoto	Japan
Samuel	Araki	ERC Inc.	samuel.j.araki@gmail.com	Huntsville, AL	USA
Vladimir	Aristov	Dorodnicyn Computing Centre, Russian Academy of Sciences	aristovvl@yandex.ru	Moscow	Russia
Scott	Baalrud	University of Iowa	scott-baalrud@uiowa.edu	Iowa City, IA	USA
Gulru	Babac Schuebler	Istanbul Technical University	babac@itu.edu.tr	Istanbul	Turkey
Hans	Babovsky	Technische Universität Ilmenau	hans.babovsky@tu-ilmenau.de	Ilmenau	Germany
Céline	Baranger	CEA/CESTA	celine_baranger@hotmail.com	Le Barp	France
Federico	Bariselli	von Karman Institute for Fluid Dynamics	federico.bariselli@vki.ac.be	Brussels	Belgium
Alexander	Beckmann	University of Victoria	alexander.beckmann1988@gmail.com	Victoria	Canada
Niclas	Bernhoff	Karlstad University	niclas.bernhoff@kau.se	Karlstad	Sweden
Upendra	Bhandarkar	IIT Bombay	bhandarkar@iitb.ac.in	Mumbai	India
Devesh	Bharadwaj	University of Victoria	halcyon.vds@gmail.com	Victoria	Canada
Rustom	Bhiladvala	University of Victoria	rustomb@uvic.ca	Victoria	Canada
Tilman	Binder	University of Stuttgart	binder@irs.uni-stuttgart.de	Stuttgart	Germany
Jean-Pierre	Boeuf	LAPLACE, CNRS, University of Toulouse	jpb@laplace.univ-tlse.fr	Toulouse	France
Yevgeniy	Bondar	Institute of Theoretical and Applied Mechanics (ITAM)	bond@itam.nsc.ru	Novosibirsk	Russia
Arnaud	Borner	University of Illinois at Urbana, NASA Ames Research Center	arnaud.p.borner@nasa.gov	Moffett Field, CA	USA
Stefan	Brechtken	Technische Universität Ilmenau	stefan.brechtken@tu-ilmenau.de	Ilmenau	Germany
Lubos	Brieda	Particle In Cell Consulting LLC	lubos.brieda@particleincell.com	Los Angeles, CA	USA
Stéphane	Brull	Université de Bordeaux	stephane.brull@math.u-bordeaux1.fr	Bordeaux	France
Domenico	Bruno	Istituto di Nanotecnologia - CNR	domenico.bruno@cnr.it	Bari	Italy
Jonathan	Burt	Ohio Aerospace Institute	jonathanburt@oai.org	Cleveland, OH	USA
Alexander	Butkovskii	Central Aerohydrodynamic Institute (TsAGI)	albutkov@mail.ru	Zhukovsky	Russia
Russel	Cafilisch	UCLA	rcaflisch@ipam.ucla.edu	Los Angeles, CA	USA
Christopher	Capon	University of New South Wales	christopher.capon@student.adfa.edu.au	Sydney	Australia
Vincent	Casseau	University of Strathclyde	vincent.casseau@strath.ac.uk	Glasgow	UK
Mehmet	Celenligil	Middle East Technical University	celenlig@metu.edu.tr	Ankara	Turkey
Guillermo	Chacon-Acosta	Universidad Autónoma Metropolitana Unidad Cuajimalpa	gchacon@correo.cua.uam.mx	México	Mexico
Aiguo	Chen	China Aerodynamics Research and Development Center	chenaiguo@cardc.cn	Mianyang	China
Chi-Yang	Cheng	Ansys, Inc.	chiyang.cheng@gmail.com	Lebanon, NH	USA
Kang-Chun	Cheng	Dartmouth College	Kang-Chun.R.Cheng.17@dartmouth.edu	Hanover, NH	USA
Chariton	Christou	Heriot-Watt University	cc535@hw.ac.uk	Edinburgh	UK
Cédric	Croizet	Université Pierre et Marie Curie & CNRS	cedric.croizet@upmc.fr	Paris	France
Christian	Day	Karlsruhe Institute of Technology (KIT)	christian.day@kit.edu	Karlsruhe	Germany

Timothy	Deschenes	Spectral Sciences, Inc.	tdeschenes@spectral.com	Burlington, MA	USA
Bruno	Dias	von Karman Institute for Fluid Dynamics	barros@vki.ac.be	Brussels	Belgium
Giacomo	Dimarco	University of Ferrara.	giacomo.dimarco@unife.it	Ferrara	
Francois	Dubois	Conservatoire National des Arts et Metiers, University Paris Sud	francois.dubois@math.u-psud.fr	Paris	France
David	Emerson	STFC Daresbury Laboratory	david.emerson@stfc.ac.uk	Daresbury, Warrington	UK
Daniel	Espinoza	University of Strathclyde	daniel.espinoza@strath.ac.uk	Glasgow	UK
Fei	Fei	Huazhong University of Science and Technology	ffei@hust.edu.cn	Wuhan	China
Huang	Fei	China Academy of Aerospace Aerodynamics	huang05013@163.com	Beijing	China
Aldo	Frezzotti	Politecnico di Milano	aldo.frezzotti@polimi.it	Milano	Italy
Sudhir	Gai	UNSW Canberra	s.gai@adfa.edu.au	Canberra	Australia
Michael	Gallis	Sandia National Labs	magalli@sandia.gov	Albuquerque, NM	USA
Barry	Ganapol	University of Arizona	mary.ganapol@gmail.com	Tuscon	USA
Rongkang	Gao	University of New South Wales	Rong.Gao@student.adfa.edu.au	Canberra	Australia
Ana	Garcia-Perciante	Universidad Autónoma Metropolitana Unidad Cuajimalpa	ana.garcia.perciante@gmail.com	México	Mexico
Renée	Gatignol	Université Pierre et Marie Curie (UPMC)	renee.gatignol@upmc.fr	Paris	France
Marc-André	Gaveau	CEA	marc-andre.gaveau@cea.fr	Gif-sur-Yvette	France
Gian Pietro	Ghiroldi	Politecnico di Milano	gpghiro@gmail.com	Milano	Italy
Vincent	Giovangigli	CNRS-Ecole Polytechnique	vincent.giovangigli@polytechnique.fr	Palaiseau	France
David	Goldstein	The University of Texas at Austin	david@ices.utexas.edu	Austin, TX	USA
Hossein	Gorji	RWTH Aachen University	gorji@mathcces.rwth-aachen.de	Aachen	Germany
Martin	Grabe	DLR, German Aerospace Center	martin.grabe@dlr.de	Goettingen	Germany
David	Graves	University of California at Berkeley	gravesdav@gmail.com	Berkeley, CA	USA
Rodion	Groll	University of Bremen	groll@zarm.uni-bremen.de	Bremen	Germany
Clinton	Groth	University of Toronto	groth@utias.utoronto.ca	Toronto	Canada
Jeff	Haack	Los Alamos National Laboratory	haack@lanl.gov	Los Alamos, NM	USA
Vadiraj	Hemadri	Indian Institute of Technology Bombay	vadiraj666@gmail.com	Mumbai	India
Kyle	Higdon	University of Texas at Austin	khigdon@utexas.edu	Austin, TX	USA
William	Hoey	The University of Texas at Austin	whoey@utexas.edu	Austin, TX	USA
Zhenying	Hong	Institute of Applied Physics and Computational Mathematics	zyhong@iapcm.ac.cn	Beijing	China
Reinhard	Illner	University of Victoria	rillner@uvic.ca	Victoria	Canada
Masashi	Inaba	Osaka University	m.inaba@mech.eng.osaka-u.ac.jp	Osaka	Japan
Vladimir	Istomin	Saint Petersburg State University	vladimir_istomin@ifea.spbu.ru	St. Petersburg	Russia
Patrick	Jenny	ETH Zurich	jenny@ifd.mavt.ethz.ch	Zurich	Switzerland
Zhongzheng	Jiang	Zhejiang University	jzhongzh@zju.edu.cn	Hangzhou	China
Xuhong	Jin	China Academy of Aerospace Aerodynamics	jinxuhong08@163.com	Beijing	China
Abolfazl	Karchani	Gyeongsang National University	abolfazl.karchani@gmail.com	Jinju	South Korea
Yoshiaki	Kawagoe	Tohoku University	kawagoe@chapman.ifs.tohoku.ac.jp	Sendai	Japan
Andrew	Ketsdever	University of Colorado, Colorado Springs	aketsdev@uccs.edu	Colorado Springs, CO	USA
Iskander	Khalidov	Peter the Great St.-Petersburg Polytechnic University	iskander.khalidov@yandex.ru	St.-Petersburg	Russia

Gengo	Kihara	The University of Tokyo	kihara@fel.t.u-tokyo.ac.jp	Tokyo	Japan
Angelos	Klothakis	Technical University of Crete	aklothakis@gmail.com	Chania	Greece
Eldon	Knuth	UCLA	elknuth@ucla.edu	Thousand Oaks, CA	USA
Kazumichi	Kobayashi	Hokkaido University	kobakazu@eng.hokudai.ac.jp	Sapporo	Japan
Julian	Köllermeier	RWTH Aachen University	julian.koellermeier@gmx.de	Aachen	Germany
Misaki	Kon	Hokkaido University	konmi@eng.hokudai.ac.jp	Sapporo	Japan
Gilberto	Kremer	Universidade Federal do Parana	kremer@fisica.ufpr.br	Curitiba	Brasil
Stephan	Kuechlin	ETH Zurich	kuechlin@ifd.mavt.ethz.ch	Zurich	Switzerland
Ko	Kugimoto	Toyota Central R&D Labs., Inc	kugimoto@mosk.tytlabs.co.jp	Nagakute	Japan
Olga	Kunova	Saint Petersburg State University	kunova.olga@gmail.com	St. Petersburg	Russia
Elena	Kustova	Saint Petersburg State University	elena_kustova@mail.ru	St. Petersburg	Russia
Jérémie	Laplace	University of Toronto	jeremie.laplace@mail.utoronto.ca	Toronto	Canada
Hai	Le	University of California, Los Angeles	hai.le@ucla.edu	Los Angeles, CA	USA
Deborah	Levin	University of Illinois, Urbana-Champaign	deblevin@illinois.edu	Urbana, IL	USA
Jun	Li	Peking University	junelee8969@gmail.com	Beijing	China
Weiming	Li	Peking University	liweiming@pku.edu.cn	Beijing	China
Zhihui	Li	China Aerodynamics Research and Development Center	zhli0097@x263.net	Mianyang	China
Jie	Liang	China Aerodynamics Research and Development Center	liangjie29501@163.com	Mianyang	China
Derek	Liechty	NASA Langley Research Center	Derek.S.Liechty@nasa.gov	Hampton, VA	USA
Chang	Liu	Hong Kong University of Science and Technology	cliuaa@connect.ust.hk	Clear Water Bay	Hong Kong
Duncan	Lockerby	University of Warwick	D.Lockerby@warwick.ac.uk	Warwick	UK
Xueli	Luo	Karlsruhe Institute of Technology (KIT)	xueli.luo@kit.edu	Karlsruhe	Germany
Thierry	Magin	von Karman Institute for Fluid Dynamics	magin@vki.ac.be	Brussels	Belgium
Carlos	Maldonado	USAF Academy	cmaldona@uccs.edu	Colorado Springs, CO	USA
Giorgio	Martalo	Université de Bordeaux	giorgio.martalo@u-bordeaux.fr	Bordeaux	France
Robert	Martin	Air Force Research Laboratory	robert.martin.81.ctr@us.af.mil	Edwards AFB, CA	USA
Julien	Mathiaud	CEA-CESTA	julien.mathiaud@u-bordeaux.fr	Bordeaux	France
Hiroaki	Matsumoto	Yokohama National University	matsu@ynu.ac.jp	Yokohama	Japan
James	McDonald	University of Ottawa	James.McDonald@uOttawa.ca	Ottawa	Canada
Mariia	Mekhonoshina	Saint Petersburg State University	mekhonoshinama@gmail.com	St. Petersburg	Russia
Alma	Méndez	Universidad Autónoma Metropolitana Unidad Cuajimalpa	armendezr@gmail.com	México	Mexico
Hélène	Mertz	Airbus Defence and Space	hmertzenseirb@gmail.com	Toulouse?	France
Luc	Mieussens	Université de Bordeaux	luc.mieussens@math.u-bordeaux1.fr	Bordeaux	France
Timothy	Minton	Montana State University	tminton@montana.edu	Bozeman, MT	USA
Alireza	Mohammadzadeh	University of Victoria	alirezam@uvic.ca	Victoria	Canada
Rho Shin	Myong	Gyeongsang National University	myong@gnu.ac.kr	Jinju	South Korea
Masataka	Nakauchi	Tohoku University	nakauchi@nanoint.ifs.tohoku.ac.jp	Sendai	Japan
Tomohide	Niimi	Nagoya University	niimi@mech.nagoya-u.ac.jp	Nagoya	Japan
Paul	Nizenkov	University of Stuttgart	nizenkov@irs.uni-stuttgart.de	Stuttgart	Germany
Georgii	Oblapenko	Saint-Petersburg University	kunstmord@kunstmord.com	St. Petersburg	Russia

Sean	O'Byrne	University of New South Wales	s.obyrne@adfa.edu.au	Canberra	Australia
Bum Seok	Oh	Korea Aerospace Research Institute (KARI)	obs@kari.re.kr	Daejeon	South Korea
Jean-Maxime	Orlac'h	Ecole Polytechnique	jean-maxime.oralach@polytechnique.edu	Palaiseau	France
Takashi	Ozawa	Japan Aerospace Exploration Agency	ozawa.takashi@jaxa.jp	Tokyo	Japan
Musa	Ozturkmen	ROKETSAN Inc. - Engineer	oozturkmen@roketstan.com.tr	Ankara	Turkey
Rodrigo	Palharini	Institute of Aeronautics and Space	rophys@gmail.com	São José dos Campos	Brasil
Tzu-Jung	Pan	University of Illinois at Urbana-Champaign	tpan5@illinois.edu	Urbana, IL	USA
Devon	Parkos	Purdue University	dparkos@purdue.edu	West Lafayette, IN	USA
Jean-Philippe	Peraud	Lawrence Berkeley National Laboratory	jperaud@lbl.gov	Berkeley, CA	USA
Viviane	Pierrard	Royal Belgian Institute for Space Aeronomy, and Université Catholique de Louvain	viviane.pierrard@oma.be	Brussels	Belgium
Aaron	Pikus	Purdue University	apikus@gmail.com	West Lafayette, IN	USA
Leanne	Pitchford	University of Toulouse 3 and CNRS	pitchford@laplace.univ-tlse.fr	Toulouse	France
Ram	Prakash	UNSW Canberra	ram.prakash@student.adfa.edu.au	Canberra	Australia
Behnam	Rahimi	University of Victoria	behnamr@uvic.ca	Victoria	Canada
Alexey	Rebrov	Russian Academy of Sciences	rebrov@itp.nsc.ru	Novosibirsk	Russia
Lakshminarayana	Reddy	Jawaharlal Nehru Centre for Advanced Scientific Research	lnreddy@incasr.ac.in	Bangalore	India
Wladimir	Reschke	University of Stuttgart,	reschke@irs.uni-stuttgart.de	Stuttgart	Germany
Ehsan	Roohi	Ferdowsi University of Mashhad	ehsan.roohi.fum@gmail.com	Mashhad	Iran
Alma	Sagaceta-Mejía	Universidad Iberoamericana Ciudad de México	alma.sagaceta@correo.uia.mx	México	Mexico
Irina	Sagert	Los Alamos National Laboratory	sagert@lanl.gov	Los Alamos, NM	USA
Alfredo	Sandoval-Villalazo	Universidad Iberoamericana Ciudad de México	alfredo.sandoval@ibero.mx	México	Mexico
Neeraj	Sarna	RWTH Aachen University.	sarna@mathcces.rwth-aachen.de	Aachen	Germany
Thomas	Sasse	Technische Universität Ilmenau	thomas.sasse@tu-ilmenau.de	Ilmenau	Germany
Vladimir	Saveliev	National Center of Space Research and Technology	Vladimir.L.Saveliev@gmail.com	Almaty	Kazakhstan
Tom	Schwartzentruber	University of Minnesota	schwartz@umn.edu	Minneapolis, MN	USA
James	Scoggins	von Karman Institute for Fluid Dynamics	scoggins@vki.ac.be	Brussels	Belgium
Li	Shiyi	Tsinghua University	shiyi-li12@mails.tsinghua.edu.cn	Beijing	China
Bernie	Shizgal	University of British Columbia	bshizgal@gmail.com	Vancouver	Canada
Nick	Sirmas	University of Ottawa	nsirmas@uottawa.ca	Ottawa	Canada
Lars	Söderholm	Royal Institute of Technology (KTH)	lars.soderholm@mech.kth.se	Stockholm	Sweden
Jean-Pierre	St. Maurice	University of Saskatchewan	jp.stmaurice@usask.ca	Saskatoon	Canada
Andrew	Strongrich	Purdue University	astrongr@purdue.edu	West Lafayette, IN	USA
Henning	Struchtrup	University of Victoria	struchtr@uvic.ca	Victoria	Canada
Wei	Su	Istituto di Nanotecnologia - CNR	suweibuaa@gmail.com	Bari	Italy
Sauro	Succi	IAC-CNR	succi@iac.cnr.it	Rome	Italy
Hiroshi	Sugimoto	Kyoto University	sugimoto@kuaero.kyoto-u.ac.jp	Kyoto	Japan
Quanhua	Sun	Chinese Academy of Sciences	gsun@imech.ac.cn	Beijing	China
Satoshi	Taguchi	The University of Electro-Communications	taguchi.satoshi@uec.ac.jp	Tokyo	Japan
Shigeru	Takata	Kyoto University	takata.shigeru.4a@kyoto-u.ac.jp	Kyoto	Japan

Hideki	Takeuchi	National Institute of Technology, Kochi College	takeuchi@me.kochi-ct.ac.jp	Nankoku	Japan
Giorgos	Tatsios	University of Thessaly	tatsios@mie.uth.gr	Volos	Greece
Boone	Tensuda	University of Toronto	boone.tensuda@mail.utoronto.ca	Toronto	Canada
Maksim	Timokhin	Lomonosov Moscow State University	timokhin@physics.msu.ru	Moscow	Russia
Erik	Torres	von Karman Institute for Fluid Dynamics	torres@vki.ac.be	Brussels	Belgium
Manuel	Torrilhon	RWTH Aachen	torrilhon@rwth-aachen.de	Aachen	Germany
Tetsuro	Tsuji	Osaka University	tsuji@me.es.osaka-u.ac.jp	Osaka	Japan
Masaaki	Tsukamoto	Tokyo Denki University	12kz032@ms.dendai.ac.jp	Tokyo	Japan
Ozgur	Tumuklu	University of Illinois, Urbana-Champaign	ozgurtumuklu@gmail.com	Urbana, IL	USA
Marielle	Varenne-Pellegrini	CEA (France)	marielle.varenne@cea.fr	Le Barp	France
Philip	Varghese	The University of Texas at Austin	varghese@mail.utexas.edu	Austin, TX	USA
Stylianios	Varoutis	Karlsruhe Institute of Technology (KIT)	stylianios.varoutis@kit.edu	Karlsruhe	Germany
Andrei	Vedernikov	Université Libre de Bruxelles	avederni@ulb.ac.be	Brussels	Belgium
Stephen	Voelkel	The University of Texas at Austin	svoelkel@utexas.edu	Austin, TX	USA
Alexey	Volkov	University of Alabama	avolkov1@ua.edu	Tuscaloosa, AL	USA
Ruijie	Wang	Northwestern Polytechnical University	ruijie.wang@nwpu.edu.cn	Xi'an	China
Zhi-Hui	Wang	University of Chinese Academy of Sciences	wisdom@ucas.ac.cn	Beijing	China
Masao	Watanabe	Hokkaido University	masao.watanabe@eng.hokudai.ac.jp	Sapporo	Japan
Junxia	Wei	Institute of Applied Physics and Computational Mathematics	wei_junxia@iapcm.ac.cn	Beijing	China
Craig	White	University of Glasgow	craig.white.2@glasgow.ac.uk	Glasgow	UK
Jon	Wilkening	UC Berkeley	wilken@math.berkeley.edu	Berkeley, CA	USA
Aihua	Wood	AFIT	aihua.wood@afit.edu	Ohio	USA
Michael	Woronowicz	Stinger Ghaffarian Technologies, Inc., Dr.	michael.woronowicz@nasa.gov	Greenbelt, MD	USA
Lei	Wu	University of Strathclyde	lei.wu.100@strath.ac.uk	Glasgow	UK
Ingrid	Wysong	AFRL	ingrid.wysong@us.af.mil		USA
Liu	Xiaowen	China Academy of Aerospace Aerodynamics	liuxiaowen_1982@126.com	Beijing	China
Kun	Xu	Hong Kong University of Science and Technology	makxu@ust.hk	Clearwater Bay	Hong Kong
Takanori	Yamada	Tohoku University	yamada@chapman.ifs.tohoku.ac.jp	Sendai	Japan
Hiroki	Yamaguchi	Nagoya University	hiroki@nagoya-u.jp	Nagoya	Japan
Rong	Yang	Beijing Institute of Applied Physics and Comp. Mathematics	sunflower_yr@163.com	Beijing	China
Andrew	Yau	University of Calgary	yau@ucalgary.ca	Calgary	Canada
Shigeru	Yonemura	Tohoku University	yonemura@ifs.tohoku.ac.jp	Sendai	Japan
Yuta	Yoshimoto	The University of Tokyo	yyoshimoto@fel.t.u-tokyo.ac.jp	Tokyo	Japan
Vladimir	Zakharov	Universite Pierre et Marie Curie, LESIA Observatoire de Paris	vzakharov@lmd.jussieu.fr	Paris	France
Chenglong	Zhang	University of Texas at Austin	chenglongzhng@gmail.com	Austin, TX	USA
Yonghao	Zhang	University of Strathclyde	yonghao.zhang@strath.ac.uk	Glasgow	UK
Wenwen	Zhao	Zhejiang University	wenwen.zhao@hotmail.com	Hangzhou	China
Tong	Zhu	University of Illinois at Urbana-Champaign	zt19890518@gmail.com	Urbana, IL	USA
Gennaro	Zuppardi	University of Naples "Federico II"	zuppardi@unina.it	Napoli	Italy