

34th International Symposium on Rarefied Gas Dynamics

Brisbane, Australia

13-17 July 2026

Program



Monday 13 July				
08:20 - 09:00 Welcome Remarks, Welcome to Country, 49-200				
09:00 - 10:00 Room: 49-200 Plenary 1: Dr Domenico Giordano , The Harold Grad Lecture: Reflections on my experience with the kinetic theory Chair: <i>Em. Prof Hans Hornung</i>				
Mon 13 Jul 10:10 - 11:10				
	Room: 50-N201 Aerospace Chair: <i>Yonghao Zhang</i>	Room: 50-N202 Monte Carlo methods and numerical Chair: <i>Russel Caffisch</i>	Room: 50-T103 Moment methods Chair: <i>Julian Koellermeier</i>	Room: 50-T105 Internal flows and vacuum systems Chair: <i>Surya Kiran Peravali</i>
10:10	Vibrationally state-resolved rotational relaxation time (102) (S) <i>Yingying Yun, Elena Kustova</i>	Variance Reduction in the Fokker-Planck Particle Method for Rarefied Gases using Quasi-Random Numbers (127) (S) <i>Lukas Netterdon, Veronica Montanaro, Hossein Gorji, Manuel Torrilhon</i>	A Multi-Temperature ES-BGK Model with a Continuous Internal-Energy Variable: Derivation of a Maximum-Entropy 21-Moment System and Two-Temperature Navier-Stokes-Fourier Limits (64) <i>Takashi Arima, Annamaria Pollino</i>	Pressure Profile along Microchannel induced by Thermal transpiration flow (34) <i>Hiroki Yamaguchi, Hiroki Kura, Irina Graur</i>
10:30	Vibrational Non-Boltzmann Effects in Advection-dominated Boundary Layer Flows (151) (S) <i>Shrithari Ravichandran, Robyn L. Macdonald</i>	Discrete Rotational Energy for Polyatomic Molecules in Direct Simulation Monte Carlo (51) <i>Derek Liechty, Dylan Crouse, Thomas Schwartzentruber</i>	Symmetrizable Hyperbolic Moment Closures with a Convex Entropy (165) (S) <i>Benoit Allard, James McDonald</i>	Modelling rarefied gas mixture flows using various kinetic approaches (94) <i>Thanasis Basdanis, Christos Tantos, Tim Teichmann</i>
10:50	Modeling reflected-shock tube experiments using ab initio vibrational specific kinetics for oxygen mixtures (173) <i>Luis Rodriguez, Robyn Macdonald</i>	Polyatomic chemistry modeling in DSMC using a harmonically-coupled-anharmonic-oscillator model (26) (S) <i>Simone Lauterbach, Franziska Tutas, Stefanos Fasoulas, Marcel Pfeiffer</i>	Rotation-Based Dimensional Reduction for Nonlinear Moment Closures in Multidimensional Kinetic Systems (89) (S) <i>Eda Yilmaz, Manuel Torrilhon</i>	Alternative Internal Structures of Turbomolecular Pumps Using Numerical Analysis of Rarefied Gas (86) <i>Hiroshi Sugimoto, Shun Otani, Maika Itou</i>
11:10 - 11:40 Coffee Break, 49 Level 3				
Mon 13 Jul 11:40 - 13:00				
	Room: 50-N201 Aerospace Chair: <i>Uendra Bhandarkar</i>	Room: 50-N202 Monte Carlo methods and numerical Chair: <i>William McDoniel</i>	Room: 50-T103 Boltzmann and related equations Chair: <i>Masanari Hattori</i>	Room: 50-T105 Internal flows and vacuum systems Chair: <i>Hiroshi Sugimoto</i>
11:40	Aerothermal Comparisons of CFD and Flight Data for the W-2 Reentry Capsule Using the MMT Model (67) (S) <i>Sean Cranford, Thomas Gross, Thomas Schwartzentruber</i>	TBA (Invited) (252) <i>Maninder Grover</i>	Steady Solutions to the Relativistic Boltzmann Equation in a Slab (15) <i>Jin Woo Jang, Seok-Bae Yun</i>	DSMC-Based Analysis of Gas Flow Behavior in Particle Exhaust Systems of Fusion Reactors (93) <i>Fotini Litovoli, Christos Tantos, Holger Strobel</i>
12:00	Configuration Optimization of ABEP-Equipped VLEO Satellites Based on a Feasible-Region Approach (80) <i>Chao Yang, Jinyue Geng, Xiaoqi Li, Heji Huang, Quanhua Sun, Yuan Hu</i>	TBA (Invited) (252) <i>Maninder Grover</i>	A Kinetic Linear Stability Theory Framework for High Speed Flows (169) <i>Irmak Taylan Karpuzcu, Mor Aharoni, Deborah Levin, Vassilis Theofilis</i>	Study of coating uniformity and axis switching of metal vapour jet through rectangular nozzles in thin film deposition systems (113) (S) <i>Anik Mazumder, Nagaraj Alangi, Sanjay Sethi, Uendra Bhandarkar, Kinshuk Dasgupta, Amit Agrawal</i>
12:20	Surrogate-Based Aerodynamic Shape Optimization of HTV-2-Type Vehicle from Continuous to Rarefied Flow Regimes (114) (S) <i>Wenpei Long, Xiaozhe Xi, Yue Zhang, Junzhe Cao, Kun Xu</i>	Photophoretic force exerted on a membrane composed of rings (33) <i>Felix Sharipov, Benjamin C. Schafer, Joost J. Vlassak</i>	A Multi-level Implicit Discrete Velocity Method to Solve the Relaxation-type Boltzmann Equation (117) (S) <i>Kaiwen Guan, Takayuki Yamada</i>	Towards Efficient Aerosol Injector Design for Generating Protein-Sized Nanoparticle Beams (230) <i>Suryakiran Peravali, Jingzuan He, Amit Kumar Samanta, Philipp Neumann, Jochen Kupper, Michael Breuer</i>
12:40	Coarse-grain modelling of a hypersonic expanding flow (81) (S) <i>Caiyu Xie, Rowan Gollan, Nicholas Gibbons, Carolyn Jacobs</i>	Molecular Dynamics Study of Poiseuille Flow of Dense Confined Fluids (157) (S) <i>Ryo Kiyose, Satoshi Taguchi, Tetsuro Tsuji</i>	Fluid-dynamic limit of the Enskog equation with the guaranteed H-theorem (41) (S) <i>Aoto Takahashi, Shigeru Takata</i>	
13:00 - 14:00 Lunch, 49 Level 3				
Mon 13 Jul 14:00 - 15:20				
	Room: 50-N201 Aerospace Chair: <i>Alina Alzeenko</i>	Room: 50-N202 Experimental methods Chair: <i>Alexis Lefevre</i>	Room: 50-T103 Boltzmann and related equations Chair: <i>Deborah Levin</i>	Room: 50-T105 Gas-surface interactions Chair: <i>Timothy Minton</i>
14:00	DSMC coupling with peridynamics for aero-thermal-structural analysis (13) <i>Shivei Hu, Xu Wang, Yong Wang, Guan Zhang, Tianbai Xiao, Yonghao Zhang</i>	Laser Absorption Measurements of Nitric Oxide Formation in Air with High Vibrational State Resolution (49) <i>Jesse Streicher, Devin Merrell, Dylan Drescher, Ronald Hanson</i>	Kinetic Theory Analysis of a Lid-Driven Cavity Flow of a Gas: Behavior of the Gas near Sharp Corners (23) <i>Masanari Hattori</i>	Gas Surface Interaction Model for Very Low Earth Orbit (VLEO) Systems (6) <i>Ahlan Appar, Savio Poovathingal</i>
14:20	Investigation of Shock Standoff Distance in Hypersonic Rarefied Flows with DSMC Method (32) (S) <i>Wei Fang, Zhi-Hui Wang</i>	Saturated Absorption Velocimetry in the Freestream of a High Enthalpy Shock Tunnel Flow (144) (S) <i>Swapneel Roy, Sean O'Byrne</i>	Development of a Particle Bhatnagar-Gross-Krook Method for Rarefied Monatomic Gas Mixtures (29) (S) <i>Inchan Kim, Jooneum Kim, Woonghui Park, Eunji Jun</i>	MD-DSMC modelling of gas-surface interaction for VLEO systems. (170) <i>Sachin Nair, Ahlan Appar, Savio Poovathingal</i>
14:40	Efficient Adjoint Optimization of Rarefied Gas Flows (38) <i>Lei Wu</i>	Optimisation of X2 Schlieren System for Studying Nonequilibrium Low Density Hypersonic Flows (177) (S) <i>Sandy Goetjens, Sam Lock, Richard Morgan, Chris James</i>	Lattice Boltzmann schemes for parabolic problems under monotonicity conditions (52) <i>Denise Aregba, Nathalie Bonamy Parrilla, Stephane Brull</i>	Machine Learning-Based Gas-Surface Scattering Model for Direct Simulation Monte Carlo Simulations in Very Low Earth Orbit (91) (S) <i>Miklas Schutte, Stefanos Fasoulas, Marcel Pfeiffer</i>
15:00	Kinetic modelling of rarefied gas flows with radiation (125) <i>Qi Li, Jianan Zeng, Lei Wu</i>	Velocity Distribution of Water Molecules Evaporating From a Liquid Surface: Molecular Beam Experiment and Molecular Dynamics Simulation (185) <i>Ikuya Kinefuchi, Kohei Sato, Atsuki Fujita</i>	KitAMR.jl: An Adaptive Mesh Based, Efficient and Scalable DVM Solver (57) (S) <i>Longqing Ge, Tianbai Xiao, Qingdong Cai</i>	An Inverse-Design Approach to Characterizing Gas-Surface Interaction in VLEO and Their Effects on Aerodynamic Drag (69) <i>Sai Sudha Ramesh, Benjamin Y.J. Wong, Wai Lee Chan, Roland Yingjie Tay</i>
15:20 - 15:50 Coffee Break, 49 Level 3				
Mon 13 Jul 15:50 - 17:10				
	Room: 50-N201 Aerospace Chair: <i>Lei Wu</i>	Room: 50-N202 Experimental methods Chair: <i>Jesse Streicher</i>	Room: 50-T103 Boltzmann and related equations Chair: <i>Jin Woo Jang</i>	Room: 50-T105 Gas-surface interactions Chair: <i>Ahlan Appar</i>
15:50	Magnetohydrodynamic Aerobraking Research at The University of Queensland (251) <i>David Gildfind</i>	Collisional relaxation kinetics of CO2 at high temperature by Raman spectroscopy (196) <i>Carlos Alvarez, Guzman Tejada, Jose M. Fernandez</i>	A hybrid kinetic/fluid model based on Kinetic-Diffusion Monte Carlo for neutral particle simulations in plasma edge (40) (S) <i>Zhirui Tang, Thijs Steel, Niels Horsten, Giovanni Samaey</i>	Surface Roughness Effects on Gas-Surface Scattering and Recombination in VLEO (22) (S) <i>Woonghui Park, Eunji Jun</i>
16:10	Magnetohydrodynamic Aerobraking Research at The University of Queensland (251) <i>David Gildfind</i>	Investigating Fibre Optic Intensity Calibrations for Spectrally Resolved Surface Emission Spectroscopy of Non-Equilibrium Flows (209) (S) <i>Robert Hawken, Samuel Lock, Chris James</i>	An implicit unified gas-kinetic scheme with adaptive mesh refinement in velocity space (215) (S) <i>Quan Yuan, Qibing Li</i>	Molecular Dynamics Investigation of Aerodynamic Heating on Nano-Rough Surfaces in High-Speed Flows (36) <i>Quan Han, Can Cao</i>
16:30	Magnetohydrodynamic Flow Control during LEO Reentry with Realistic Magnetic Field and Capsule Geometry (83) (S) <i>Liam Neulands, Vincent Wheatley, David Gildfind</i>	Poiseuille coefficient for mixtures of rarefied gases: measurements and modelling (227) <i>Irina Graur Martin, Felix Sharipov, Emil Grigorov, Pierre Perrier, Frederic Topin</i>	Self-thermophoresis of a Thin Circular Disk (156) <i>Takuma Tomita, Satoshi Taguchi, Tetsuro Tsuji</i>	Molecular Beam-Surface Scattering Dynamics Relevant to Satellites in Very Low Earth Orbit (VLEO) (130) <i>Tim Minton, Pedro Jorge, Chenbiao Xu, Celeste Guiles</i>
16:50	Numerical Study of Magnetohydrodynamic Aerobraking for Large-scale Spacecraft with Magnetic Field Deformation (158) (S) <i>Sebastiaan van Oeveren</i>	TDLAS characterisation of magnetic field deformation within a hypersonic MHD flowfield (237) <i>Alexis Lefevre, David Gildfind, Tristan Vanyai, Timothy McIntyre, Jude Hendricks, Takeaki Muramatsu, Kohei Shimamura</i>	Evaporation of a metal droplet in rarefied gas (194) <i>Denize Kalempa, Felix Sharipov</i>	Effect of Adsorbed Molecules on the Scattering Characteristics of Gas Molecules at Solid Surfaces (110) <i>Kazuki Takemura, Takashi Tokumasu, Hideki Takeuchi</i>

Tuesday 14 July				
09:00 - 10:00	Room: 49-200 Plenary 2: Dr Shahid Rauf, The Irving Langmuir Lecture: Rarefied Plasmas for Nanofabrication: Modeling, Diagnostics and Applications Chair: <i>Dr Ingrid Wysong</i>			
Tue 14 Jul 10:10 - 11:10				
	Room: 50-N201 Aerospace Chair: <i>Eunji Jun</i>	Room: 50-N202 AI and Machine Learning in rarefied gas dynamics Chair: <i>Tianbai Xiao</i>	Room: 50-T103 Moment methods Chair: <i>Jacek Polewiczak</i>	Room: 50-T105 Gas-surface interactions Chair: <i>Alessandro Munafò</i>
10:10	A Quasi-1D Stagnation Line Solver for designing Hypersonic Non-Equilibrium Experiments (180) (S) <i>Taine Rossini, Toby van den Herik, Christopher James</i>	Residual closure of Navier-Stokes-Fourier system for rarefied flows (9) (S) <i>Yijun Wang, Hossein Gorji, Patrick Jenny</i>	Non-equilibrium simulations of monatomic rarefied gas flows based on Grad's 20-moment equations (58) <i>Satyvir Singh, Manuel Torrilhon</i>	A Navier Type Boundary Condition for Boltzmann Equation (65) <i>Vincent Giovangigli, Kazuo Aoki, Francois Golse, Shingo Kosuge</i>
10:30	Nonequilibrium Ionization And Chemistry Effects Of H2O Plume Injection In Rarefied Hypersonic Reentry Flow (210) (S) <i>Erik Zabalegui Lopez, Evgeniia Vorozhbit, Jesus Meza-Galvan, Alina Alezeenko</i>	Machine-learning-based derivation of moment closures for strongly nonequilibrium flows (47) (S) <i>Hang Song, Satyvir Singh, Manuel Torrilhon</i>	Non-Equilibrium Applications of Hyperbolic Higher-Order Moment Models with Solid-Wall Boundary Conditions (164) (S) <i>Ethan Rice, Stefano Boccelli, James McDonald</i>	Model of Thermal Slip Under Near-Wall Fluid-Solid Interaction Potentials (133) <i>Tetsuro Tsuji, Koichiro Takita, Satoshi Taguchi</i>
10:50	Adaptation of Optical Foil Calorimeter for Stagnation Point Model Thermography (153) (S) <i>Chengxin Yu, David Guldfind, David Mee, Timothy McIntyre</i>	Topology of machine-learned DSMC constitutive relations in rarefied Couette flow and the proof of the elliptic constraint (55) <i>Gagan Gary, Tapan Mankodi, Rho Shin Myong</i>	Boundary conditions for fluid models describing neutral particles in the plasma edge of a fusion device (25) (S) <i>Vince Maes, Wouter Dekeyser, Julian Koellermeier, Martine Baelmans, Giovanni Samaey</i>	Modeling of Sawtooth-Shaped Walls for Rarefied Gas Flow Control (112) (S) <i>Jiwon Lee, Dibyesh Satpathy, Kimiya Komurasaki, Nadine Barth, Maho Matsukura, Hiroyuki Koizumi</i>
11:10 - 11:40	Coffee Break, 49 Level 3			
Tue 14 Jul 11:40 - 13:00				
	Room: 50-N201 Prof. Suzuki memorial Chair: <i>Domenico Giordano</i>	Room: 50-N202 AI and Machine Learning in rarefied gas dynamics Chair: <i>Nadim Maraqtin</i>	Room: 50-T103 Turbulence and instabilities Chair: <i>Vincent Wheatley</i>	Room: 50-T105 Gas-surface interactions Chair: <i>Savio Poovathingal</i>
11:40	Development of Research Concepts Based on Hypersonic Wind Tunnel Experiments (207) <i>Osamu Imamura</i>	A Physics-Informed Neural Particle Method for the Spatially Homogeneous Landau Equation (10) <i>Minseok Kim, Yeoneung Kim, Donghyun Lee, Sung-Jun Son</i>	Stability and Transition Investigations for an Accelerated Boundary-Layer at Mach 5 - 7.5 for the Free-Flight Measurements GASFEEx II (99) (S) <i>Lennart Bott, Cosimo Capecchi, Christian Stemmer, Ingo Jahn, Jack Williamson, Morgan Van Hoffen, Marcus Hoerschgen-Eggers, Maximilian Hiepp, Rainer Kirchhartz, Robert Pietsch</i>	A modeling framework for gas-surface interaction processes in hypersonics and plasma discharges (109) <i>Alessandro Munafò, Claudio Chicchiero, Abhyudaya Singh, Sankeev Kumar, Kelly Stephani, Marco Panesi</i>
12:00	R&D Activity on the Inflatable Aeroshell Atmospheric-entry Technology and Future Vision of Mars Exploration (111) <i>Kazuhiko Yamada</i>	Physics-informed Neural Networks Based on the Fokker-Planck Model for Rarefied Gas Flows (21) (S) <i>Joonbeom Kim, Eunji Jun</i>	Influence of wall-temperature distribution on hypersonic boundary-layer stability (100) (S) <i>Cosimo Capecchi, Christian Stemmer</i>	Numerical assessment of parietal accommodation at hypersonic rarefied flow conditions (88) (S) <i>Beatriz Carda, Viviana Lago, Damien Toussaint</i>
12:20	DSMC Simulations and Ground Tests for ABIE Intake Development (79) <i>Takashi Ozawa, Ryunosuke Endo, Masahito Tagawa, Tomotaka Yamamoto, Shunsuke Imamura</i>	A Unified Physical-Neural Modeling Framework for Rarefied Gas Dynamics via Differentiable Simulation (70) <i>Tianbai Xiao</i>	Rarefaction effects on high-speed boundary-layer stability and receptivity (108) <i>Jihui Ou, Jie Chen</i>	Design of a Test Model for Studying Gas Surface Interactions in Ablating Flows (149) (S) <i>Henry Straede, Samuel Lock, Timothy McIntyre, Richard Morgan, Christopher James</i>
12:40	Aerobraking and Professor Kojiro Suzuki: Contributions and Legacy (11) <i>Maximilien Berthet</i>		Modelling Characteristic Disturbances in Impulse Facilities (154) (S) <i>Noah Wechgelær, Chris James</i>	Rarefaction-Controlled Oxidizer Transport and Thermal Response in Ablating Porous Composite TP (202) <i>Upendra Yadav, Kelly Stephani, Marco Panesi</i>
13:00 - 14:00	Lunch, 49 Level 3			
Tue 14 Jul 14:00 - 15:20				
	Room: 50-N201 Jets and plumes Chair: <i>Martin Grabe</i>	Room: 50-N202 AI and Machine Learning in rarefied gas dynamics Chair: <i>Rho Shin Myong</i>	Room: 50-T103 Turbulence and instabilities Chair: <i>Rowan Gollan</i>	Room: 50-T105 Gas-surface interactions Chair: <i>Ikuo Kinofuchi</i>
14:00	Ionosphere-Rocket Exhaust Plume Interactions: A Hybrid CFD-DSMC Study (82) (S) <i>Muhammad Arham, Trevor Lafleur, David Petty, George Bowden</i>	Machine Learning Collision Models to Accelerate Direct Molecular Simulation of Rarefied Flows in Diatomic Gases (225) (S) <i>Nicholas Daultry Ball, Justin Strignano, Jon MacArt</i>	Vibrational Non-Equilibrium Effects on Rarefied Reactive Richtmyer-Meshkov Instability (30) <i>Wendy Adolph Casseus, Kuo-Long Pan</i>	Accelerated Oxide Formation and Functional Degradation of Conductive Materials in Reactive, Rarefied Plasma Environments (98) (S) <i>Rodrigo Sandoval Rodriguez, Kalle Brauner, Jana Zorn, Jan Luka Dormseifer, Kristof Holste, Peter J. Klar</i>
14:20	Modelling of plume-plume interactions in space like environment via the hybrid DSMC-Fokker-Planck approach (146) <i>Leo Basov, Martin Grabe</i>	From sparse diagnostics to plume fields: what can (not) be inferred with PINN-PONN reconstruction? (152) <i>Nadim Maraqtin, Georg Herdrich, Uwe Soergel</i>	Experimental Evidence for the Normal Shock Instability in a Two-dimensional Granular Gas (192) (S) <i>Eduardo Suarez Morales, Farzane Zangene, Matei Radulescu</i>	Influence of diffusion modelling on catalytic wall heat flux in hydrogen/helium boundary layers (174) (S) <i>Matthew Uren, Yu Liu, Chris James, Richard Morgan</i>
14:40	Plume Impingement Software Module for Real-Time Proximity Operations (178) <i>Kyle Higdon, Wayne Yu</i>	A Data-Driven Bayesian Calibration of the International Reference Ionosphere Using Spacecraft Potential Measured Aboard the ISS (78) <i>Rachel Ulrich, Kelly Moran, Ky Potter, Gabriel Wilson, Carlos Maldonado</i>	Wave-particle turbulent simulation (WPTS), one multi-scale non-equilibrium turbulence modeling approach (216) <i>Xiaojian Yang, Kun Xu</i>	Molecular Dynamics Study of Reactive Gas-Surface Interactions Induced by Atomic Oxygen in VLEO (222) <i>Zhi-Hui Wang, Rui-Ling Tao, Chao-Yue Zhao, Xu-Hong Jin</i>
15:00		Parametric Velocity Modes from DSMC Shocks (171) <i>Robert Martin</i>	Frequency-domain general synthetic iterative scheme for efficient simulation of oscillatory rarefied gas flows (46) (S) <i>Li Pengshuo, Wu Lei</i>	
15:20 - 15:50	Coffee Break, 49 Level 3			
16:00 - 17:30	Poster session, 49-301			

Wednesday 15 July				
09:00 - 10:00	Room: 49-200 Plenary 3: Prof Irina Graur , The Lloyd Thomas Lecture: Gas transport at microscale and low pressure: experiments and simulations Chair: <i>Prof Alina Alexeenko</i>			
Wed 15 Jul 10:10 - 11:10				
	Room: 50-N201 Aerospace Chair: <i>Robyn Macdonald</i>	Room: 50-N202 Monte Carlo methods and numerical Chair: <i>Derek Liechty</i>	Room: 50-T103 Rarefied plasmas Chair: <i>Philip Varghese</i>	Room: 50-T105 Gas-surface interactions Chair: <i>Tetsuro Tsuji</i>
10:10	Numerical Study of Photophoretic Forces on a Thin Plate with Various Structured Surfaces (214) <i>Jie Chen, Yi Wang</i>	Construction of a Unified Gas-Kinetic Wave-Particle Method for ES-BGK Models (7) (S) <i>Celine Baranger, Alexis Coepear, Luc Mieussens</i>	Fast-convergence and asymptotic-preserving simulation of charged particle flows based on the Vlasov-BGK-Poisson system (76) (S) <i>Yifan Wen, Lei Wu</i>	Experimental Demonstration of Radiometric Force in a Crookes Radiometer with Isothermal Vanes (87) <i>Yuma Takami, Hiroshi Sugimoto</i>
10:30	Phase-based Microwave Shock Velocity Interferometry (234) (S) <i>Toby van den Herik, Christopher M. James</i>	Extension of unified gas-kinetic wave-particle method to the gas mixture flow with an elementary chemical reaction (85) (S) <i>Junzhe Cao, Yufeng Wei, Wenpei Long, Chengwen Zhong, Kun Xu</i>	Experimental investigation of non-thermal plasma jet chemistry (223) (S) <i>Roshan John Kurian, Nils Temme, Farzan Zare, Carolyn Jacobs, Vincent Wheatley</i>	A Molecular Dynamics Study of Evaporation and Condensation of Atomic Clusters at a Metal Surface as well as Cluster Growth in the Vapor Phase (96) <i>Alexey N. Volkov, Saeed Siahkiri, Lily Stubblefield</i>
10:50	Zeeman spectroscopy of hypersonic flow in a magnetic field (176) <i>Timothy McIntyre, David Gildfind, Yu Liu, Nils Temme, Chengzhi Yu, Samuel Lock</i>	Extension and application of a quantum lattice Boltzmann method to free molecular flow around a flat plate (97) (S) <i>Aaron Nagel, Leo Basov</i>	An Accurate Energy-Preserving Particle Integration Scheme for the Vlasov-Fokker-Planck System (66) (S) <i>Armin Riess, Hossein Gorji, Patrick Jenny</i>	Multiscale Analysis of Oxygen Transport in Catalyst Layer in Polymer Electrolyte Fuel Cell (119) (S) <i>Hirotaaka Sugihara, Ikuya Kinefuchi, Takashi Tokumasu</i>
11:10 - 11:40 Coffee Break, 49 Level 3				
Wed 15 Jul 11:40 - 13:00				
	Room: 50-N201 Aerospace Chair: <i>Tristan Vanyai</i>	Room: 50-N202 Monte Carlo methods and numerical Chair: <i>Xueli Luo</i>	Room: 50-T103 Rarefied plasmas Chair: <i>Patrick Jenny</i>	Room: 50-T105 Reactive gas dynamics Chair: <i>Robert MacDermott</i>
11:40	DSMC-CFD Consistency in the Continuum/Transition Overlap Region for a Deployable Mars Capsule (122) (S) <i>Federica Portis, Domenic D'Ambrosio, Antonio Schettino</i>	Comprehensive cross section datasets for charged particle collisions with atoms and molecules (Invited) (148) <i>Dmitry Fursa, Liam Scarlett, Haadi Umer, Corey Plowman, Igor Bray, Mark Zammit, Michael Pak, Richard Bergmayr, Dirk Wuen-dertich, Ursel Fantz</i>	Electromagnetic flow control in hypersonic rarefied environment (145) <i>Zhigang Pu, Kun Xu</i>	Research on the Mechanism of OH Ultraviolet Non-equilibrium Radiation Spectral Characteristics in hypersonic Rarefied Flow (219) <i>Shijie Chai, Yuhuai Zhang, Dandan Zeng, Hao Chen, Shuaihui Li</i>
12:00	Dimension-reduced Simulation of Hypersonic Vibrational Non-Equilibrium Flows Using DSMC Method (179) (S) <i>Zixin Liu, Zhihui Wang</i>	Comprehensive cross section datasets for charged particle collisions with atoms and molecules (Invited) (148) <i>Dmitry Fursa, Liam Scarlett, Haadi Umer, Corey Plowman, Igor Bray, Mark Zammit, Michael Pak, Richard Bergmayr, Dirk Wuen-dertich, Ursel Fantz</i>	Monte Carlo modeling of nonstoichiometry in laser produced plasmas of a binary alloy target (163) <i>Rommel Emperado, Arjay Dulay, Marc Robert Casero, Myles Allen Zosa, Lean Dasallas, Wilson Garcia</i>	H-theorems for dense reactive mixtures and global existence of solutions (74) <i>Jacek Potewczak</i>
12:20	Propellant Transport Modeling of Atmosphere-Breathing Electric Propulsion Using a DSMC-Centered Numerical Framework (120) <i>Geonwoong Moon, Minwoo Yi, Eunji Jun</i>	Particle Merge Strategies for PIC/DSMC Plasmas (199) <i>William McDoniel, Aubrey Zimmer, Christopher Moore, Andrew Fierro</i>	A novel two-fluid approach for modelling the near-wall collisionless electron sheath under strong thermionic emission (193) <i>Shahzeb Imran, Vincent Wheatley, Dale Pullin</i>	Nonequilibrium Hydrogen Kinetics for Gas Giant Atmospheric Entry (16) <i>Clement Cuvrais, Sung Min Jo, Marco Panesi</i>
12:40	Pore-Scale Rarefaction Effects on Aerodynamic Heating of a Gas-Permeable Textile for Deployable Aeroshells (116) (S) <i>Reo Iida, Kazuhiko Yamada, Akira Oyama</i>		Kinetic simulations of non-equilibrium ionization and excitation in laser-induced plasma plumes (95) <i>Alexey N. Volkov, Michael A. Stokes, Tanner Tripoli, Michael Wolkow, Zhibin Lin</i>	A flow field for studying recombination and vibrational de-excitation rates (136) <i>Hans Hornung, Robert Watt, Peter Jacobs, Joanna Austin, Rowan Gollan</i>
13:00 - 14:00 Lunch, 49 Level 3				
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	Room: 50-N201 Aerospace Chair: <i>Tamara Sopek</i>	Room: 50-N202 Monte Carlo methods and numerical Chair: <i>Dmitry Fursa</i>	Room: 50-T103 Rarefied plasmas Chair: <i>Alexey Volkov</i>	Room: 50-T105 Reactive gas dynamics Chair: <i>Hans Hornung</i>
14:00	Experimental Validation of Hydrogen Dissociation Schemes using Non-Equilibrium Uranus Entry Flow in the X2 Expansion Tube (28) (S) <i>Daisy-May Jostyn, Samuel Lock, Robert Watt, Nicholas Gibbons, Yu Liu, Richard Morgan, Christopher James</i>	TBA (Invited) (253) <i>Kelly Stephani</i>	Experimental investigation of the efficiency and compression ratio of a passive intake for air-breathing electric propulsion (31) (S) <i>Jana Zorn, Max Reinhardt, Peter J. Klar</i>	Modeling Reacting Flow for Hybrid Navier-Stokes/DSMC Methods (68) (S) <i>Mitchell Wall, Iain Boyd</i>
14:20	Vacuum Ultraviolet to Near-Infrared Measurements of Precursor Radiation in the X2 Expansion Tube (160) (S) <i>Samuel Lock, Yu Liu, Christopher James, Timothy McIntyre, Richard Morgan</i>	TBA (Invited) (253) <i>Kelly Stephani</i>	Numerical characterisation of a supersonic bidirectional vortex inductively coupled plasma torch (128) (S) <i>Landry Riou, Amaury Bilocq, David Henneaux, Pierre Schroeyen, Koen Hillewaert, Thierry Magin, Trevor Lafleur</i>	Numerical Simulation of Chemically Reacting Wakes of Hypersonic Spheres Using Kestrel CFD (141) <i>Blake Martin, Robert MacDermott, Joel Redmond</i>
14:40	Investigation of Thermochemical Effects on Hypersonic Flow Unsteadiness Over a Double Cone (172) <i>Shubham Thirani, Dr. Deborah Levin</i>	An Adjoint Method for Optimization of RGD (115) <i>Russel Ciftisch, Yunan Yang</i>	Accurate PIC Simulation of Ion Optics using p-Adaptation on Tetrahedral Meshes (138) (S) <i>Kim-Sophie Ellenberger, Tobias Ott, Stefanos Fasoulas, Marcel Pfeiffer</i>	Rovibronic Energy Transfer and Reactive Processes in Direct Simulation Monte Carlo (53) <i>Clement Cuvrais, Marcel Pfeiffer</i>
15:00	Experimental Observations of Plasma Wakes Created by Charged Bodies (236) <i>Carlos Maldonado, Matthew Dunn, Gabriel Wilson, Rachel Ulrich</i>	Modeling of Chemically Reactive Gas Flows for Multi-Scale Problems (62) (S) <i>Franziska Tutas, Marcel Pfeiffer</i>	Flight Configuration Optimization of VLEO Satellites Considering Electromagnetic Forces under Strong Geomagnetic Activity (211) (S) <i>Hao Ding, Shuqiu Zhang, Dandan Zeng, Xilong Yu, Shuaihui Li</i>	Investigation of neutral gas ionization by an electron beam using a particle-in-cell approach with Monte-Carlo collisions (159) <i>Vincent Wheatley, Shahzeb Imran, Dale Pullin</i>
15:20 - 15:50	Coffee Break, 49 Level 3			
16:00 - 17:00	NextGen Panel, 49-200			

Friday 17 July			
09:00 - 10:00	Room: 49-200 Plenary 4: Prof Thomas E. Schwartzentruber , The Graeme Bird Lecture: Direct molecular simulation of hypersonic flow and gas-surface scattering for VLEO Chair: <i>Prof Rho Shin Myong</i>		
Fri 17 Jul 10:10 - 11:10			
	Room: 50-N201 Aerospace Chair: <i>Dale Pullin</i>	Room: 50-N202 Monte Carlo methods and numerical Chair: <i>Felix Sharipov</i>	Room: 50-T103 Moment methods Chair: <i>Clement Cuvrais</i>
10:10	Experimental Heat Transfer Distributions in Swept Shock-Boundary Layer Interactions (SwSBLIs) across Rarefied Regimes (107) (S) <i>Nnaemeka F. Anyamele, Nathan Donaldson, Alec Berry, Peter T. Ireland, Luke J. Doherty</i>	Multiscale Hybrid CFD/DSMC Simulation of Rocket-Induced Atmospheric Waves for Ionospheric Disturbance Prediction (18) <i>Gokula Krishna Tavva, George William Bowden</i>	Model-Adaptive Simulation of Moment Models for Non-Equilibrium Gas Flows (35) <i>Julian Koellermeier, Rik Verbiest</i>
10:30	Maximising Vibrational Nonequilibrium in Supersonic Nozzle Flows (181) <i>David John Petty</i>	Analysis of fast-converging and asymptotic-preserving DSMC boosted by GSIS intermittently (90) (S) <i>Bin Hu, Lijun Luo, Lei Wu</i>	A Comparative Assessment of Moment-Based Closures for Flows at Various Levels of Rarefaction (162) (S) <i>Daniele Bionese, Pierre Bernigaud, Marc Massot</i>
10:50	Failure of NS Equation in Jet Turbulence (50) <i>Songyan Tian, Lei Wu</i>	Kinetic-Continuum (KC) Internal Energy and Chemistry Model for DSMC (203) <i>Michael Kroells, Thomas Schwartzentruber</i>	Derivation of the generalized SO13 higher-order transport equation for non-continuum flows (204) <i>Upendra Yadav, Amit Agrawal</i>
11:10 - 11:40	Coffee Break, 49 Level 3		
Fri 17 Jul 11:40 - 13:00			
	Room: 50-N201 Aerospace Chair: <i>Sean O'Byrne</i>	Room: 50-N202 Monte Carlo methods and numerical Chair: <i>Maninder Grover</i>	Room: 50-T103 Boltzmann and related equations Chair: <i>Stephane Brull</i>
11:40	Gas-Dynamic Characterization of Airlock Venting Operations and Outgassing from Manned Lunar Rovers (105) <i>Stefano Boccelli, William M. Farrell, Prabal Saxena, Orenthal J. Tucker</i>	Pressure Profile Simulation in the Neutral Beam Injector System of a Volumetric Neutron Source (61) <i>Xueli Luo, Christos Tantos, Stefan Hanke, Thomas Giegerich, Thomas Haertl</i>	Achieving affordable high phase-space resolution for kinetic plasma dynamics via characteristic mapping methods (37) <i>Rostislav-Paul Wilhelm, Philipp Krah, Fabio Bacchini, Katharina Kornmann, Kai Schneider</i>
12:00	The Aerodynamic and Acoustic Performance of a Bumblebee-Inspired Vehicle in the Martian Atmosphere (238) <i>Nathan Widdup, Li Wang, John Young, Fang-Bao Tian</i>	Implementation of Surface Radiation to SPARTA's Hypersonic Ablation Model (60) <i>Falk Ramín, Lennart Bott, Christian Stemmer</i>	Heat transfer problem of a dense gas described by the Enskog equation with a modification of the Enskog factor (42) (S) <i>Shigeru Takata, Soma Sakata, Masanari Hattori</i>
12:20		A Phenomenon Related to a Knudsen Force Exerted on an Object in a Gas with a Different Temperature (224) <i>Shigeru Yonemura, Clint John Otic</i>	Weakly Nonlinear Drag Induced by Uniform Surface Heating of a Sphere (189) <i>Satoshi Taguchi, Kwanghyun Ko, Tetsuro Tsuji</i>
12:40			
13:00 - 14:00	Lunch, 49 Level 3		
14:00 - 14:20	Farewell, 49-200		

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