ISSW35 - Program

Monday 7 July							
08:20 - 09:00	Welcome Remarks, Welcome to Country, 49-200						
09:00 - 10:00	Room: 49-200 Plenary 1: **Hans Hornung**, Recent developments in high-enthalpy ground testing Chair: *Richard Morgan*						
Mon 7 July 10:00 - 11:00							
	Room: 50-N201 **Propulsion** Chair: *Jeong-Yeol Choi*	Room: 50-N202 **Facilities and Instrumentation** Chair: *Eric Petersen*	Room: 50-T103 **Shock Waves in Solids** Chair: *Michael Liverts*	Room: 50-T105 **Shock/Boundary Layer Interaction** Chair: *Ravi Kumar Peetala*	Room: 50-S201 **Supersonic and Hypersonic Flows** Chair: *Solkeun Jee* (NEW CHAIR)	Room: 50-C207 **Chemically Reactive Flows** Chair: *Yoshitaka Sakamura*	Room: 49-313A **Shock-Vortex Interaction** Chair: *Riccardo Bonazza*
10:00	Fluidic Thrust Vectoring of Micro Nozzles in Space Application (326) (S) *Arnab Kumar Das, Tapan Mankodi, Ujjwal K. Saha*	Commissioning Experiments in the Oxford Cold Driven Expansion Tube CXT (52) (S) *Omar Valeinis, Eric Won Keun Chang, Tobias Hermann, Matthew Mcgilvray*	Effect of shock wave on the structural and optical properties of MoS2 layered compound (80) *Dr. Jayaram Vishakantaiah, Kavitha Jayaram, Nagaraj Mariyappa*	Effects of sweep angle on hypersonic three-dimensional shock wave/turbulent boundary layer interactions (22) *Xinliang Li, Ji Zhang*	Numerical Investigation of Sonic Jet Injection in a Supersonic Crossflow with Cavity (237) (S) *Shailesh Kumar Singh, Arun Kumar Rajagopal, Srinivas M V V*	Extension of a Chemical Reaction Model in the Fokker-Planck Framework and its Application to Supersonic Flows (67) *Leo Basov, Georgii Oblapenko*	Influence of Aspect Ratios on Expansion Wave Diffraction over Cavities (296) *Rajesh G, S Vishnu Prasad, Preetha Pushkarni P, Reia Ramkumar, Anbu Serene Raj C, Mano M, Vinoth P*
10:20	Effect of Intake Shape on Supersonic Pulsed Laser Propulsion (324) (S) *Taichi Kumazaki, Kohei Shimamura*	Heated Hydrogen Driver Upgrade for the HYPULSE Shock Tunnel Facility (265) *Adrian Flores, Matthew Bush, Joseph Jewell*	Experimental and Numerical Study on the Effect of Incident Shock Stress Waves on Crack Propagation in Blasting (195) (S) *Geunsoo Jeon*	Direct Numerical Simulation of a Boundary Layer Induced by a Hypersonic Fluid Flow over a Wall (11) *Amareshwara Sainadh Chamarthi, Josette Bellan*	On the extremely Fast Vibrational Energy Relaxation between CO and H2O: An Experimental Study (55) *Dong He, Qizhen Hong, Renjie Li, Tielou Liu, Fei Li, Quanhua Sun, Ting Si, Xisheng Luo*	Shock Processing of CdS nanostructure and Computer Simulation with Machine Learning (76) *Kavitha Jayaram, Jayaram V*	Experimental Study on a Head-On Collision of Compressible Elliptical Vortex Rings. (387) (S) *Rijin Rajan, Shakti Kumar, Pawan Kumar Karn, Kamal Poddar, Debopam Das*
10:40	Exploring Three-dimensional Compression Fields for the Design of Streamline-traced Hypersonic Inlets (264) *Rowan Gollan*	Measurement of Film Cooling Effectiveness in Shock Tunnel for Transonic Flow over a Flat Plate by Multi-Test Strategy (107) *Wei Zeng, Yizhi Fang, Haiteng Ma*	Electronic and Photoluminescence Spectra of g-C3N4/Y2O3: A Shock Tube-Based Investigation (332) *Sivaprakash Paramasivam, S.A. Martin Britto Dhas, Ikhyun Kim*	An Investigation on the Origin of Heat Streaks on a Swept Wedge-Cone Geometry in Hypersonic Flow (286) *Jacob Vaughn, Ivett Leyva, Koen Groot, Bryan Morreale, Jacob Smotzer*	Design and testing of a Flush Air Data Sensing System for Sounding Rockets (102) (S) *Sanjeev Adhikari, David Buttsworth, Fabian Zander, Ingo Jahn, Ingo Jahn, Fabian Zander*	equilibrium-c: A Modern, Lightweight Equilibrium Chemistry Solver for Hypersonic Flow Applications (299) *Nicholas Gibbons, Vincent Wheatley*	Effect of Shock Leakage on Screech Mode Transition of Supersonic Jet Flows (87) (S) *Jiacheng Liu, Shucheng Pan*
11:00 - 11:30	Coffee Break, 49 Level 3						
Mon 7 July 11:30 - 12:50							
	Room: 50-N201 **Atmospheric Entry** Chair: *Upendra Bhandarkar*	Room: 50-N202 **Diagnostics and Flow Visualization** Chair: *Tamara Sopek*	Room: 50-T103 **Multiphase Flows** Chair: *Josette Bellan*	Room: 50-T105 **Shock/Boundary Layer Interaction** Chair: *Arnab Roy*	Room: 50-S201 **Supersonic and Hypersonic Flows** Chair: *Ulrich Teubner*	Room: 50-C207 **Chemical Kinetics** Chair: *Justin Urso*	Room: 49-313A **Shock Wave Reflection, Interaction, and Focussing** Chair: *Eran Arad*
11:30	Flow visualization experiments around flare-type membrane aeroshell using ISAS expansion tube (202) (S) *Tomohito Morimoto, Jiro Kasahara, Yasunori Nagata, Kazuhiko Yamada*	Improvement of Dye-Painted Anodized-Aluminum Pressure-Sensitive Paint for Shock-Induced Unsteady Flow Measurement (427) (S) *Yuma Kawamata, Takeru Kawashima, Kiharu Yoneyama, Daiju Numata*	Numerical Simulation of the Aerobreakup of Two Droplet Positioned in Tandem under High Speed Flow (65) (S) *Yanming Li, Wangxia Wu, Honghui Teng*	The Effects of Mass Injection through Porous Media upstream of a Crossing Shock/Boundary-layer Interaction (78) (S) *Anthony Finnerty, Matthew Mcgilvray, David Mee, Raghul Ravichandran, Wesley Condren, Srinath Lakshman*	Study on the Ablation of UHTC and Graphite in Arc-Jet Environments via Flow-Material Response Coupled Analysis (86) (S) *Seonghwan Kim, Kyu Hong Kim, Yosheph Yang, Hojun You, Jaegang Kim*	Contact-Surface Tailoring Using N2/H2 and CO2/H2 Driver Mixtures in Diverging Shock Tubes (37) (S) *Matthew Sandberg, Eric Petersen*	Shock Wave Propagation with Fore-Flow in Converging Ducts (208) (S) *Naotaka Shigeta, Nao Kimura, Jun Hagiwara, Daniel Custodio, Takumi Asahi, Koki Ozawa, Yusuke Nakamura, Akihiro Sasoh, Gaku Fukushima*
11:50	Preliminary analysis of radiation measurements for high-speed Mars and Venus entry (266) *Yu Liu, Alexis Lefevre, David Gildfind, Kyle Damm, Chris James, Richard Morgan*	CN Laser Absorption Measurements at Extreme Conditions in a Free-Piston Shock Tube (436) *William Swain, Elijah Jans, Charley Downing, Kyle Lynch, Kyle Daniel, Justin Wagner*	Spread Rates of Bi-disperse Particle Curtains (438) *Kyle Daniel, Justin Wagner*	Wall Temperature Effect on Shock Wave/Turbulent Boundary Layer Interaction by Cryogenic Wall Cooling (164) (S) *Yuma Miki, Leo Ando, Azumi Miyazaki, Aoi Ban, Kiyoshi Kinefuchi, Yasuhiro Egami*	Tagging Velocimetry in Hypersonic Boundary Layers (200) (S) *Ben Segall, Tim Keenoy, Nick Parziale*	NO Formation from Hydrogen Enriched Natural Gas Combustion in a Shock Tube using Cavity Enhanced Absorption Spectroscopy (106) *Ramees Rahman, Subith Vasu, Gregory Vogel*	Investigation of flow control-based heating reduction schemes for a V-shaped blunt leading edge (6) (S) *Tao Zhang, Chongguang Shi, Chengxiang Zhu, Yancheng You*
12:10	Convective Heat Transfer On A Reentry Body In Martian Atmosphere At Varying Enthalpies (315) (S) *Jithin Sreekumar, Honhar Gupta, Md Gulam Sarwar, Soumya Ranjan Nanda, Ashoke De, Mohammed Ibrahim Sugarno*	Drag Coefficient Measurement of a Sphere at Different Deceleration Rates (441) *Takamasa Kikuchi, Atsuki Yamauchi, Ren Sasaki, Mahiro Kudo, Kiyonobu Ohtani*	Particle Separation Using Expansion Waves (197) *Martin Brouillette, AurLie Grebe, Gaku Fukushima, David Chartrand, Mohamed Eldakamawy*	Effect of Freestream and Boundary-Layer Turbulence on SWBLI-Induced Unsteadiness in Mach 6 Flow (157) (S) *Emma Nicotra, Sally Bane, Joseph Jewell*	Subscale Suction Tests of an Airframe-integrated Busemann Intake for an Airbreathing Rocket (174) *Yuma Miki, Tasuku Miyazaki, Kiyoshi Kinefuchi, Yusuke Maru, Hiroaki Kobayashi, Shinichiro Tokudome, Tetsuya Sato*	Molecular Level Understanding of Nonequilibrium Air Chemistry in Hypersonic Flows (293) *Tom Schwartzentruber, Erik Torres*	Focusing of Shocks Generated by Underwater Copper Foil Explosions of Different Geometries (24) *SebastiN Rojas Mata, Francesc HernNdez Garcia, Michael Liverts*
12:30	Measurement of Carbon Monoxide during TPS Ablation in a Hypersonic Shock Tunnel using Tunable Diode Laser Absorption Spectroscopy (433) *John Murray, Joshua Hargis, Christopher Murzyn, William Swain, Charley Downing, Kyle Lynch, Justin Wagner*	Shock Tube VUV Measurements of High Temperature Air Chemistry in Nitrogen-Oxygen-Argon Mixtures (256) (S) *Zev Granowitz, Devin Merrell, Jesse Streicher, Christopher Strand, Ronald Hanson*	Experimental Investigation of Liquid Aluminum Droplet Breakup in a Shock Tube (254) (S) *Leopold Winter, Marcus Giglmaier, Nikolaus A. Adams*	Shock Reflections with Dynamic Seperation Bubble (44) *Jianhui Fan*	Hypersonic boundary-layer transition control using acoustic metasurface (53) (S) *Yifeng Chen, Peixu Guo, Chihyung Wen*	Nonequilibrium chemistry model validation in a high-enthalpy test facility (248) *Tom Schwartzentruber, Erik Torres, Thomas Gross*	Thermochemical Non-Equilibrium Effects on Edney Type IV Shock Interactions in High-Enthalpy Hypersonic Flows (221) *Anu Priya, Ravi Peetala*
12:50 - 13:50	Lunch, 49 Level 3						

13:50 - 14:50	Room: 49-200 Plenary 2: **Sally Bane**, Advancements in Active Control of Shock Wave/Boundary Layer Interaction Chair: *Akihiro Sasoh*						
14:50 - 15:20	Coffee Break, 49 Level 3						
Mon 7 July 15:20 - 16:20							
	Room: 50-N201 **Nozzle Flows and Supersonic Jets** Chair: *Ben Guan*	Room: 50-N202 **Facilities and Instrumentation** Chair: *Sangdi Gu*	Room: 50-T103 **Shock Waves in Internal Flows** Chair: *Sannu Molder*	Room: 50-T105 **Shock/Boundary Layer Interaction** Chair: *Guilai Han*	Room: 50-S201 **Supersonic and Hypersonic Flows** Chair: *Dale Pullin*	Room: 50-C207 **Chemical Kinetics** Chair: *Christopher Strand*	Room: 49-313A **Numerical Methods** Chair: *Santanu Ghosh*
15:20	Characterization of a Single-Pulse, Highly Underexpanded Jet in the Endwall Region of a Shock Tube (415) (S) *Tristan Crumley, Matthew Abulail, Eric Petersen*	Design and Construction of a Large-diameter, Single-pulse Converging Shock Tube (89) (S) *Shijie Bai, Tianyou Wang, Xingyu Liang, Kun Wang*	DNS and LES of shock train in internal flows (13) *Somnath Ghosh, Agneev Roy*	Validity of Johnstons triangular crossflow model in conical shock wave boundary layer interactions (323) (S) *Bikalpa Bomjan Gurung, Sudhir Laxman Gai, Krishna Talluru*	Computational investigation of shear layer stability for different boundary layer thickness and cavity geometries in a laminar supersonic flow (339) (S) *Mohammed Areeb Hussain, Karthick Sk*	Laboratory Investigation of shock-induced dissociation of dust analogues - Buckminsterfullerene C60 and Coronene C24H12: Insights from real-time optical emission diagnostics. (42) *Deepak Singh*	A r-adaptive Discontinuous Galerkin Method Based on Interface Conservation for Computing Shock Waves on Arbitrary Grids (325) *Hong Luo, Gianni Absillis, Robert Nourgaliev, Patrick Greene*
15:40	Thrust Performance of ED Nozzle Induced by Internal Shock (284) (S) *Kyunghwan Han, Hyoung Jin Lee*	Near-Full-Scale CFD Simulation of HEK-X Flowfield (343) *Takeharu Sakai, Hiroshi Katsurayama, Hideyuki Tanno*	Large Eddy Simulations of Isolator Shock Trains in Supersonic Co-flow Configuration (153) *Pavithirah Selvam, Balaji Himakar Apparascheruvu, Srisha Rao*	Forced Axisymmetric Transitional SBLI at Mach 5 (440) *Ashish Singh, James Threadgill, Jesse Little*	Experimental analysis of acoustic noise receptivity using a ray-tracing technique for high-enthalpy conditions (312) (S) *James Wallington, Ramprakash Ananthapadmanaban, Chris James, David Gildfind, Anand Veeraragavan, David Mee*	State-to-State Chemical-Kinetic Database Construction and Master Equation Study for Hydrogen Chemistry (96) (S) *Hyesu Jeong, Sung Min Jo, Sung Min Jo*	Dynamic Load Balancing for Parallel Simulations of Unsteady Oblique Shock Wave Reflections Using Adaptive Mesh Refinement (113) *Yoshitaka Sakamura, Hiroki Mori, Katsuyuki Nakayama*
16:00	Interaction of the Recirculation Flow and Vortex Development in Extremely Underexpanded Supersonic Impinging Jet (240) (S) *Qingmo Xie, Huakun Huang, Peng Yu*	Stanton Number Measurement on a Blunt Body Using the Multi-Test Strategy in a Shock Tunnel (108) - NEW TITLE (S) *Siming Dai, Yizhi Fang, Haiteng Ma*	Unsteadiness mitigation in a transonic cavity flow with a deep sub-cavity (171) (S) *Cherishma Mallavarapu, Hideaki Ogawa, Karthick Sk*	Interaction between cavity and wake flows in the transonic regime (250) (S) *Harshit Bansal, Pradeep Moise, Karthick Sk, Sriram Rengarajan, Sriram Rengarajan*	Effects of calculated experimental freestream conditions on double cone numerical predictions (28) (S) *Aaron Kennedy, Rowan Gollan, Matthew Mcgilvray*	Stochastic Chemical-kinetics Modeling of High-temperature Nitrogen (94) (S) *Tae Woong Jeong, Sung Min Jo, Sung Min Jo*	Bound- and positivity-preserving first-order velocity-consistent HLL scheme for two-medium γ-based model of stiffened gas (124) *Wai Sun Don, Bao-Shan Wang, Yuan-Yang Qiao, Chang-Ming Guo*
16:20 - 17:20	Laboratory tours, 49 Level 3						
Tuesday 8 July							
08:30 - 08:40	Daily announcements, 50-T203						
08:40 - 09:40	Room: 50-203 Plenary 3: **Hideyuki Tanno**, Insights and Applications from high-enthalpy Shock Tunnel Studies Chair: *Joanna Austin*						
Tue 8 July 09:40 - 11:00							
	Room: 50-N201 **Atmospheric Entry** Chair: *Savio Poovathingal*	Room: 50-N202 **Diagnostics and Flow Visualization** Chair: *Bryan Schmidt*	Room: 50-T103 **Shock Waves in Internal Flows** Chair: *Haiteng Ma*	Room: 50-T105 **Shock/Boundary Layer Interaction** Chair: *Zhufei Li*	Room: 50-S201 **Nozzle Flows and Supersonic Jets** Chair: *Andrea Sansica*	Room: 50-C207 **Chemically Reactive Flows** Chair: *Yu (Daisy) Liu*	Room: 49-313A **Blast Waves** Chair: *Marianne G. Omang*
9:40	Spectroscopic Measurements of Shock Layer around the Capsule Model with Hollow Fiber Probe (350) *Satoshi Nomura, Hiroki Takayanagi, Takumi Futohashi*	Non-Equilibrium Nitric Oxide Thermometry, Partial Pressure, and Velocity Measurements at 100 kHz in a Hypersonic Shock Tunnel (443) *Jonathan Gilvey, Elijah Jans, Bradley Lyon, Charley Downing, Kyle Lynch, Justin Wagner, Christopher Goldenstein*	Large-eddy simulation of shock-train dynamics in a cavity-stabilised ramjet engine (38) (S) *Tin-Hang Un, Salvador Navarro-Martinez*	Investigation of Roughness Elements on Oblique Shock Wave Boundary Layer Interaction (392) (S) *Akash Marade*	Numerical Study of Supersonic Exhaust Jet Flow Patterns (305) (S) *Juan Sebastian Serrato Ortiz, Sylvester Abanteriba, Yan Ding, Ralf Stark, Justin Hardi, Jan Schyndel, Thomas Esch*	Shock and blast pyrolysis of methane: a mini review (54) *Frank Lu, Ananthkumar Jayamani*	An apparatus for generating reproducible and scalable shock waves in the free field (61) (S) *Marco Gerbeit, Henrik Seeber, Dennis Grasse, Marcel Donner, Daniel Krentel*
10:00	Direct Simulation Monte Carlo study of Hypersonic Flow During Atmospheric Entry into Jovian Planets (356) *Devendra Koushal, Tapan Mankodi, Upendra Bhandarkar*	Development of CO Thermometry for Temperature Measurements over 3000-6000 K (57) (S) *Tielou Liu, Dong He, Renjie Li, Fei Li, Juchun Ding, Ting Si, Xisheng Luo*	Mechanism of Shock Transition from RR to MR with Single and Tandem Liquid Injection in a Supersonic Crossflow (184) (S) *Srinivas M V V, Arun Kumar Rajagopal*	Plasma Actuation for Control of Hypersonic Wind Tunnel Models (170) *Nathan Stern*	Effects of Permeable Section Parameters on Shock Separation and Thrust Performance of Permeable Rocket Nozzles (403) (S) *Yuqin Xue, Yuqin Jin, Suoxuan Zhang, Ben Guan, Ge Wang, Yubing Bai*	Development and Applications of an A Posteriori Two-Dimensional Solver for Shock Tube Experiments (185) (S) *Justin Clarke, Luca Di Mare, Matthew Mcgilvray*	Blast Waves Produced by Colliding Spheres (198) *Hannah Whelan, Brendan Wallace, Harald Kleine*
10:20	Instrumentation of 3D-printed Ablating aeroshells in a Hypersonic Impulse Facility (263) (S) *Steven Apirana, Nils Temme, Chris James, Richard Gareth Morgan*	Measurement of water vapor absorption spectroscopy parameters in high-temperature gases (103) *Jianyu Chao, Yi Jin, Dong He, Chao Zhai, Tielou Liu*	On the unsteadiness of reattachment shock in flow over cavity-ramp configuration (150) (S) *Waner Hu, Zhu Chengxiang, Jianhui Fan*	Normal Shock - Cavity Shear Layer Interactions in Internal Supersonic Flows (360) (S) *Siva Vayala, Harshit Bansal, Nagabhushana Rao Vadlamani, Sriram Rengarajan*	Effects of Nozzle Roughness on the Streamwise Streaks in Underexpanded Jets An Experimental Study (292) (S) *Haohan Gong, Shengkai Wang*	On The Reacting Flow Field of A Supersonic Combustor Fueled By Liquid N-Decane (219) *Wing Ki Cheung, Kuo-Long Pan*	Fundamental experiment on overpressure profile near gun muzzle (449) *Toshiharu Mizukaki, Daichi Kubo, Keisuke Kiura, Shinta Nakamura*
10:40	Combining Expansion Tubes and Laser Heating for Reentry Ablation Studies (148) *Kohei Shimamura*	Development of an Unsteady PSP Applicable to Low Reynolds Number and High Mach Number Flows for the Advancement of Supersonic Mars Aircraft (331) (S) *Tomoyuki Takizawa, Daiju Numata*	Isolator Shock Dynamics in a Streamtraced Busemann Intake during Back-Pressurization (247) (S) *Mark Noftz, Joseph Jewell*	Numerical Study on Mitigating Swept Shock-Induced Separation Using Air Jet Vortex Generators (328) (S) *Eunchae Kim, Soo Hyung Park*	Mach Stem Height Estimation in the Strong Reflection Domain (342) - ADDED PAPER *Vinoth P, Reva Dhillon, Rajesh G*	The Use of CO Rovibrational Thermometry to Demonstrate the Vibrational Relaxation Behaviors of Shock-heated Air (56) *Dong He, Qizhen Hong, Tielou Liu, Renjie Li, Fei Li, Quanhua Sun, Ting Si, Xisheng Luo*	Evaluating Incident Peak Overpressure Estimates from Body-Mounted Blast Sensors and High-Fidelity Simulations (413) *Suthee Wiri, Christina Wagner, Jasmyne Longwell, Andrea Gonzales, David Ortley, Charles Needham*
11:00 - 11:30	Coffee Break, 49 Level 3						

Tue 8 July 11:30 - 12:50							
	Room: 50-N201 **Atmospheric Entry** Chair: *Hiroki Nagai*	Room: 50-N202 **Facilities and Instrumentation** Chair: *Shengkai Wang* (NEW CHAIR)	Room: 50-T103 **Multiphase Flows** Chair: *Hong Luo*	Room: 50-T105 **Richtmyer-Meshkov Instability** Chair: *Georges Jourdan*	Room: 50-S201 **Supersonic and Hypersonic Flows** Chair: *Rajesh Ranjan*	Room: 50-C207 **Detonation, Combustion and Ignition** Chair: *Toshiharu Mizukaki*	Room: 49-313A **Numerical Methods** Chair: *Rowan Gollan*
11:30	Re-Entry Capsule Shock Layer Reconstruction from a Remote Observation (282) *Fabian Zander, Rowan Gollan*	A Ring-Amplified Shock Tube for Spectroscopy and Kinetics Research (417) *Christopher Strand, Devin Merrell, Ronald Hanson*	Barrel Shock Interaction in Tandem injection of supercritical Jet-A (394) *Eshaan Raj, Gagana Satyanarayan, Tm Muruganandam*	Richtmyer-Meshkov instability at gas/viscoelastic material interface (210) (S) *Yongrui Deng, Juchun Ding, Xisheng Luo*	High-Temperature Flow-Material Ablation Studies Using RBF Mesh Deformation (84) *Yosheph Yang, Seonghwan Kim, Gayeon Noh, Hojun You, Jaegang Kim*	Laminar Flame Speed Measurement of Supercritically Cracked Rocket Propellant-1 in a Shock Tube Under Scramjet Combustor Relevant Operating Conditions (329) *Chaitanya Bhoir, Jagadeesh Gopalan*	The influence of heat flux for compressible jet impingement heat transfer based on a developed turbulence model (398) *Huakun Huang, Qingmo Xie, Peng Yu*
11:50	Ultra High-Speed Emission Spectroscopy in the X2 Expansion Tube (259) (S) *Nathan Lu, Carolyn Jacobs, Timothy Mcintyre, Chris James*	Statistical Determination of Quasi-Steady Test Time in Shock and Expansion Tube Flows (235) (S) *Matthew Uren, Yu Liu, Chris James, Richard Gareth Morgan, Richard Gareth Morgan*	Evolution of Wall-attached Droplets under Shock Wave Impact (321) (S) *Peng Kang, Jianfeng Guo, Kai Mu, Ting Si*	Attenuation of the single-mode perturbation growth for the shocked multi-interfaces system via double waves impacts (129) (S) *Chenren Chen, Zhigang Zhai, Xisheng Luo*	Effect of Reynolds number on unsteady instabilities in hypersonic cone-step flow (447) *Gs Sidharth, Anubhav Dwivedi, Chase Jenquin, Eric Cui, Joseph Jewell*	Investigation of V-shaped initiation scheme of standing detonation engine (178) (S) *Haochen Xiong, Tao Zhang, Chongguang Shi, Yancheng You*	Spectral Fitting with Rigorous Conservation Constraints (409) *Albert Williams, Alex Glenn, Justin Clarke, Luca Di Mare, Matthew Mcgilvray*
12:10	Experimental and Numerical Study of CO2 radiation in high temperature flows (338) (S) *Yixin Xu, Senhao Zhang, Fei Li, Jinping Li, Shizhong Zhang, Xiaoyuan Zhang, Xin Lin*	Characterising the Step Response of a Static Pressure Probe (159) (S) *William Feasey, Joanna Austin, Hans Hornung*	Particle-Resolved Numerical Simulation of a Particle Lift-Off from a Rough Surface (122) *Pavel Utkin, Alexander Lopato*	Reactive Richtmyer-Meshkov Instability at Hydrogen-Air Interface (228) (S) *Jianwen Liu, Juchun Ding, Wan Cheng, Pengfei Yang, Xisheng Luo*	Experimental Investigation on Unstart and Restart phenomena in Scramjet Inlet (437) *Sanghoon Lee, Yang-Ji Lee, Inyoung Yang, Kyungjae Lee*	Wall Temperature Dependence of Flame Structure in an Axisymmetric Scramjet Combustor (389) (S) *Rahul Jain, Michael Jain, Venkat Raman*	Boundary Condition-based Machine Learning Algorithm for Fast Prediction of Chemically Reactive Hypersonic Flows in Rarefied Atmosphere (186) (S) *Rachakonda Naga Sai Prakash, Sumati Raghav, Tapan Mankodi, Niranjan Sahoo*
12:30	Axisymmetric Viscous Nitrogen Shock Layer Computed with a Vibrational-State Specific Kinetics Model (47) *Marie-Claude Druguet, Arnaud Bultel*	Feasibility of ITO Thin Film Gauges for Impulse Facilities (405) *Frank Lu, Emirhan Bayir, Anantkumar Jayamani*	High Mach Number Aerobreakup (191) *Jett Langhorn, Alex Dworzanczyk, Nick Parziale*	Richtmyer-Meshkov Instability at Quasi-Single-Mode Interfaces Accelerated by a Strong Shock Wave (68) (S) *Wei Cai, Shuaishuai Jiang, Ting Si, Xisheng Luo, He Wang*	Induced Transition Strategy over a 2D Wedge at Hypersonic Speed (301) *Talluri Vamsi Krishna, Jacob Cohen, Soumya Nanda*	Effect of Multiple Detonations on the Detonation Parameters in Rotating Detonation Engine (101) (S) *Sunil Bassi, Venkata Ramana Ikkurthi*	High-Fidelity Droplet Impingement Simulations of Hypervelocity Droplet Impingement (401) - ADDED PAPER *Manuel Viqueira Moreira, Alex Dworzanczyk, Jett Langhorn, Nick Parziale, Christoph Brehm*
12:50 - 13:50	Lunch, 49 Level 3						
13:50 - 14:50	Room: 49-200 Plenary 4: **Matthew McGilvray**, Development, experiments and a-posteriori modelling of shock tubes Chair: *Christian Mundt*						
14:50 - 15:20	Coffee Break, 49 Level 3						
Tue 8 July 15:20 - 16:20							
	Room: 50-N201 **Nozzle Flows and Supersonic Jets** Chair: *Somnath Ghosh*	Room: 50-N202 **Facilities and Instrumentation** Chair: *Krishna Talluru*	Room: 50-T103 **Medical and Biological Applications** Chair: *Gopalan Jagadeesh*	Room: 50-T105 **Richtmyer-Meshkov Instability** Chair: *He Wang*	Room: 50-S201 **Supersonic and Hypersonic Flows** Chair: *Moritz Ertl*	Room: 50-C207 **Chemical Kinetics** Chair: *Tom Schwartzentruber*	Room: 49-313A **Plasmadynamics and Magnetohydrodynamics** Chair: *Kyle Hanquist*
15:20	Mid-infrared Laser Absorption Spectroscopy of CO2 for Thermochemical Nonequilibrium Study in Expanding Flow (233) (S) *Zhang Yitong, Huang Yingjing, Qiu Wang*	Heat Transfer Measurements for Heated Canonical Geometries in Hypersonic Shock Tunnel (381) *Chathura Guddemane Ramesh, Vyom Sharma, Nagashetty K, Saravanan S, Srisha Rao*	Shock Wave Impact Effects on Surface Morphology of an Arecanut Leaf Sheath (372) (S) *Numan Ahamed N, Niyati Shanbhag, Nihad Ahmed, Sudarshan B, Anil Chandra A R, N R Prabhu Swamy*	Vortex Interactions and Mixing of A Shocked Fluid Layer (167) (S) *Dugang Zheng, Xu Guo, Zhigang Zhai, Xisheng Luo*	Computations of Turbulent Transition Control with Porous Surface in Hypersonic Boundary Layer (255) (S) *Minjae Jeong, Suhun Cho, Youngwoo Kim, Solkeun Jee*	Development of a Multi-Wavelength Laser Absorption Schema for Speciation Measurements of Ammonia and NOx Reaction Kinetics at Turbine Relevant Conditions (145) *Christopher Dennis, Justin Urso, Ramees Rahman, Nikolas Hulliger, Subith Vasu, Michael Pierro*	Electron Plasma Waves / Collision-less Shock Waves Generation by Electron Beam Emission in Ionosphere Plasma (435) *Koichi Mori, Kosuke Ohrui*
15:40	Computational investigation on the impact of the secondary injection angle on the thrust vectoring performance in a supersonic nozzle (112) (S) *Sagar Sedani, Karthick Sk, Shria Anand, Sibaram Patro, Purushothaman Nandagopalan, Sriram Rangarajan*	A quasi-one-dimensional simulation strategy for ultrahigh shock speed in the detonation-driven shock tube (236) (S) *Wentao Wang, Kai Luo, Qiu Wang, Zhuo Liu*	Study on Confined Cavitation Jet Behavior with Underwater Shock Waves for Removal of Marine Sessile Organisms (88) *Jinichi Koue, Akihisa Abe, Haruo Mimura*	Analytical and numerical investigations on non-standard Richtmyer-Meshkov instability attenuation at a heavy-light interface (127) (S) *Jiaxuan Li, Zhigang Zhai, Chih-Yung Wen Wen, Xisheng Luo*	Experimental heat loads of hypersonic diffuser and heat exchanger in GHIBLI Plasma Wind Tunnel (180) *Eduardo Trifoni, Carlo Purpura*	Ab-initio based collision model for DSMC using multiple O3 Potential Energy Surfaces (99) - REVISED TIME (S) *Ashirbad Mallick, Tapan Mankodi*	Visualization and CFD Validation of MHD Aerobraking Shock Layer Enlargement in JAXA HEK-X Expansion Tube (374) *Hiroshi Katsurayama, Yuma Higashi, Takeharu Sakai, Hiroki Sakamoto, Kohei Shimamura, Hideyuki Tanno, Shuto Yatsuyanagi*
16:00	Shock wave phenomena in expansion-deflection nozzles (227) (S) *Shuhui Zhao, Ben Guan, Ge Wang, Bocheng Zhou, Xisheng Luo*	Computational flow modelling of the X3/R free-piston driven facility in expansion tube (X) mode (139) *Tamara Sopek, Peter Jacobs, Richard Gareth Morgan*	Observation of propagation of femto-second laser induced micro shock wave and bubble behavior to develop devices for regenerative medicine (306) *Haruto Yamakita, Ayumu Yamamoto, Kota Nakashima, Masaaki Tamagawa*	Richtmyer-Meshkov Instability Coupled with a Chemical Reaction (48) *Tanner Diring, Eri Amezcua, Jason Oakley, David Rothamer, Riccardo Bonazza*	Numerical Simulation of the Experimental Results of Chemically Reaching Wakes of Hypersonic Spheres (20) *Robert Macdermott*	Comparative and Uncertainty Analyses of Radiation Solvers: MURP and NEQAIR (385) - WITHDRAWN *Sung Min Jo, Marco Panesi*	Numerical Simulation of Fully Coupled Magnetohydrodynamics with Thermochemical Nonequilibrium model in Hypersonic Regime (49) (S) *Chanho Kim, Kyu Hong Kim, Jaegang Kim, Hojun You*
16:20 - 18:00	Poster session, 49-301						

Thursday 10 July							
08:30 - 08:40	Daily announcements, 50-T203						
08:40 - 09:40	Room: 50-T203 Plenary 5: **Sean O'Byrne**, Nonintrusive diagnostics for high-speed flight tests Chair: *Ronald Hanson*						
Thu 10 July 09:40 - 11:00							
	Room: 50-N201 **Atmospheric Entry** Chair: *Eduardo Trifoni*	Room: 50-N202 **Diagnostics and Flow Visualization** Chair: *Tristan Vanyai*	Room: 50-T103 **Multiphase Flows** Chair: *Juan Sebastian Rubio*	Room: 50-T105 **Shock/Boundary Layer Interaction** Chair: *Srisha Rao M V*	Room: 50-S201 **Supersonic and Hypersonic Flows** Chair: *Peixu Guo*	Room: 50-C207 **Detonation, Combustion and Ignition** Chair: *Shrey Trivedi*	Room: 49-313A **Numerical Methods** Chair: *Nicholas Gibbons*
9:40	Validation of CO2 Chemical Kinetics in Expanding and Recombining High Density Mars Entry Conditions (445) (S) *Mragank Singh, Chris James, Tim Mcintyre, Richard Gareth Morgan*	Quantitative visualization of flow field behind weak shock waves with parallel phase-shift interferometry (238) - WITHDRAWN (S) *Yuki Iwamoto, Kiyonobu Ohtani, Toshiharu Mizukaki*	Development of a High-Fidelity Eulerian-Lagrangian Framework for High-enthalpy Particle-Laden Plasmas (95) (S) *Hyeonwoo Nam, Sung Min Jo*	Hypersonic Transitional Experiments on a 10.9 deg Cone by Using ALTP Sensors for Direct Heat-Flux and Temperature Measurements (183) (S) *Claudia Hofmann, Simon Kaneider, Tim Rodiger, Jan-Erik Brune, Christian Mundt , Lukas Jakobs*	Suppression of acoustic wave using passive device in supersonic cavity with sub-cavity. (313) *Mitali Joshi, Cherishma Mallavarapu, Karthick S. K., Hideaki Ogawa, Bamelari Dkhar*	Numerical Simulation of Shock Transmission from the Exit of a Detonation Tube (121) (S) *Milin Martin, Ebuzer Tarik Balci, Elaine Oran*	A machine learning-augmented CFD framework for achieving DSMC-level accuracy in shock flow analysis of diatomic gases (149) *Gagan Garg, Tapan Mankodi, Rho Shin Myong*
10:00	Force and Moment Coefficients of a Cube Interacting with a Ramp Shock at Mach 7 (276) (S) *Gerard Armstrong, David Buttsworth, Fabian Zander*	Development of Fast-response Temperature Sensitive Paint and Its Application to Shock Tube (110) (S) *Jinyoung Kim, Mithat Engin, Masaki Okawa, Bok Jik Lee, Tsubasa Ikami, Hiroki Nagai*	Investigating Pseudosteady Reflections in Dusty Flows using Meshless Framework (336) (S) *Avinash Singh, T. Jayachandran, Rajesh G., Shubham Kailas Vyas*	Numerical Analysis of the Reflected Shock Region in a Single-Diaphragm Shock Tube Modeled with Realistic Diaphragm Opening Profiles (353) (S) *Touqeer Anwar Kashif, Janardhanraj Subburaj, Aamir Farooq*	Film Cooling-Induced Transition in High-Speed Laminar Boundary Layers: Transition Modeling and Analysis (212) *Diviaharshavardini R C, Davoud Hosseinzadeh, Jayachandran T, Rajesh G, Ikhyun Kim*	Why the standard devices for extinguishing detonation in pipelines can work (155) *Zbigniew Walenta, Agnieszka Slowicka*	A Hybrid Genetic Algorithm-Pareto Framework for Optimizing Film Cooling in Hypersonic Flows (209) (S) *Davoud Hosseinzadeh, Diviaharshavardini R C, Ikhyun Kim*
10:20	Transpiration Cooling Using 3D-Printed Porous Silicon Carbide (189) (S) *William Matthews, Ivett Leyva, Hassan Saad Ifti, Garrett Yoder, Sean Ryan, John Howard*	Development of an Integrated Schlieren-FLDI System for Characterizing High-Speed Flows in the T4 Stalker Tube (289) (S) *Maxwell Young, Ramprakash Ananthapadmanaban, Anand Veeraragavan, Matthew Trudgian*	Effect of Sub-models in a High-Fidelity Hyperbolic System of Equations on Predicting Characteristics of Craters Formed on a Granular Soil by a Supersonic Impinging Jet (10) *Josette Bellan*	Resolvent analysis of hypersonic compression corner flow under crossflow effect (12) *Chun Kit Uy, Chih-Yung Wen Wen, Jiaao Hao, Jiaao Hao*	Experimental Study on Boundary Layer Transition Delay Using Porous Surfaces in a Hypersonic Flow (168) (S) *Junhyuk Nam, Jungmu Hur, Jinhwi Kim, Jinyoung Kim, Bok Jik Lee*	Computations on Supersonic Combustion for an Orifice Hydrogen Injection into Airstream of Mach 8 and 10 (448) *Zhuhe Zhang, Shengli Xu*	Low Cost, A-posteriori Expansion Tunnel Freestream Modelling with Non-Equilibrium (158) *Joseph Steer, Luca Di Mare, Matthew Mcgilvray*
10:40		Spectral analysis of simultaneous schlieren and shadowgraph measurements (173) *Krishna Talluru, Harald Kleine*	Wave Dynamics in Densely Packed Particles Subjected to Periodic Shock Wave Impact (156) *Pavel Utkin*	Experimental Investigation of Shock - Cavity Shear Layer Interaction in a Confined Supersonic Flow over a Tapered Cavity with Gas Injection (245) (S) *Dwarakesh Madavan, Purna Ananthkrishnan, Pandian Samiayyan, Sriram Rengarajan, Malsur Dharavath*	Using Thermal Compression to Combust Simple Hydrocarbon Fuels in Scramjets (307) (S) *Vinay Dekkala, Vincent Wheatley, Nicholas Gibbons, Tristan Vanyai*	Universal Framework for Gaseous Detonation Propagation and Initiation (109) *Zonglin Jiang*	Characterization of Turbulent Transonic Buffet Using an Improved Hybrid Monotonic Upstream-Centered Scheme (162) *Andrea Sansica, David Lusher, Keiichi Kitamura, Gaku Fukushima, Hashimoto Atsushi*
11:00 - 11:30	Coffee Break, 49 Level 3						
Thu 10 July 11:30 - 12:50							
	Room: 50-N201 **Atmospheric Entry** Chair: *Hassan Saad Ifti*	Room: 50-N202 **Facilities and Instrumentation** Chair: *Chris James*	Room: 50-T103 **Shock Waves in Dense/Rarefied Gases** Chair: *Rho Shin Myong*	Room: 50-T105 **Shock/Boundary Layer Interaction** Chair: *Sriram Rengarajan*	Room: 50-S201 **Supersonic and Hypersonic Flows** Chair: *Koen Groot*	Room: 50-C207 **Detonation, Combustion and Ignition** Chair: *Edyta Dzieminska*	Room: 49-313A **Shock Wave Reflection, Interaction, and Focussing** Chair: *Sivaprasad Gangadharan*
11:30	Preliminary X2 Expansion Tube Experiments Investigating Radiation at Peak Velocity Uranus Entry Conditions (172) (S) *Daisy-May Joslyn, Chris James, Samuel Lock, Matthew Uren, Richard Morgan, Yu Liu*	Initial Shakedown Testing of the Stanford High-enthalpy Optical Tube/Tunnel (SHOTT) (82) (S) *Tal Schwartz, Alexis Thoeny, Konstantinos Kotsarinis, Jin Lee, Padmanabha Simha, Eric Zhao, Sarah Baird, Jason Lin, Christopher Strand, Ronald Hanson*	Rarefaction waves in the dense vapors of D6 (126) *Chandrasekhar Medipati, Chiara Falsetti, Piero Colonna*	Correlation for the prediction of separation length in impinging oblique-shock/turbulent-boundary-layer interactions (320) *Vinay B A, Santanu Ghosh, Muruganandam T M*	Aerodynamic heating characteristics of V-shaped edge at hypersonic speeds (396) *Guilai Han, Shicheng Zhan*	Effects of Initiation Configuration on Development and Propagation of Detonation Waves (93) (S) *Jayson Small, Liwei Zhang*	Rylov's Conjecture and a Singularity (5) *Sannu Molder, Amin Gulamhussein, Ben Shoesmith*
11:50	Laser Absorption Spectroscopy to Magnetohydrodynamic Aerobraking in an Expansion Tube (285) (S) *Takeaki Muramatsu, Kohei Shimamura, Akira Kakami, Hiroshi Katsurayama, David Gildfind*	Characterization of Modified Shock Tunnel (S1) (241) (S) *Jithin Sreekumar, Honhar Gupta, Soumya Ranjan Nanda, Md Gulam Sarwar, Mohammed Ibrahim Sugarno*	Shock Driven Mixing of Active Scalars (304) (S) *Joaquim P Jossy, Prateek Gupta*	Aerothermal Symmetry in Hypersonic Transitional Swept Shock-Wave/Boundary-Layer Interactions (114) *Xu Liu, Di Peng, Jiaao Hao*	Three-Dimensional Receptivity of Hypersonic Boundary Layers over Sharp Wings (29) (S) *Jiachen Lu, Chun Kit Uy, Rui Zhao, Chih-Yung Wen Wen*	Thermochemical Parameters Measurement in a High Mach Number Scramjet Engine Using Mid-Infrared Laser Absorption Spectroscopy (253) (S) *Renjie Li, Dong He, Xiaoyuan Zhang, Dongdong Meng, Xi Gong, Xin Lin, Fei Li*	Time-Resolved Parametric Study of Shock Wave Reflection from Wavy Walls (352) *Randall Paton, Irshaad Mahomed, James Kamerman*
12:10	Laser-based Absorption Measurements of Atomic Air Species Using a Ring-Amplified Shock Tube (39) *Devin Merrell, Dylan Drescher, Zev Granowitz, Jesse Streicher, Christopher Strand, Ronald Hanson*	One- and Two-Dimensional Models of the HYPULSE Shock Tunnel (269) (S) *Matthew Bush, Adrian Flores, Joseph Jewell*	Fokker-Planck Simulations of the SHEFEX II Vehicle (130) *Moritz Ertl, Leo Basov, Marius Franze*	Study on the Concept of Free Interaction of Supersonic Flows over Compression Ramp (9) (S) *John Chemmanoor Joseph, Lijo V, Heuy Dong Kim, Heuy Dong Kim*	Development of Inviscid Supersonic Flow in the Wake of a Circular Cylinder (275) (S) *Akshay Kumar Nandhan, Krishna Talluru, Sudhir Laxman Gai*	Experimental Study of a Rotating Detonation Engine(RDE) with an applied Cooling Channel (273) (S) *Minsik Yun, Tae Seong Roh, Hyoung Jin Lee*	Experimental Study of Oblique-Shock/Bow-Shock Interaction with a Large-scale Test Model in Hypersonic Flows (163) *Zongmin Hu, Yao Zhang, Shaolai Li*
12:30	Role of Enthalpy on Hypervelocity Mach Stem Turbulence (411) *Rodney Bowersox*	Estimating Flow Conditions in a Stalker Tube for Conditions with Attenuating Primary Shock Waves (226) *David Mee, Isaac Convery-Brien, Sreekanth Raghunath, Peter A. Jacobs*	Collision and Reflection of Micro Shock Waves (251) *Ulrich Teubner, Walter Garen, Lars Jepsen*	Transition Scenario in a Mach-6.5 Compression Ramp Flow (25) *Shibin Cao, Qiu Wang*	Intermittency in hypersonic transitional and turbulent boundary layers (262) *Krishna Talluru, David Petty, David Mee, Anand Veeraragavan*	Detonation initiation and propagation in stratified cracked ammonia (175) *Jie Sun, Yicun Wang, Huangwei Zhang*	Shock wave focusing of hemispherical shocks (73) *Marianne Omang, Knut Ove Hauge*

12:50 - 13:50	Lunch, 49 Level 3						
13:50 - 14:50	Room: 49-200 Plenary 6: **Ivett Leyva**, Perspectives on Hypersonics from my experiences at AFOSR and academia Chair: *Joseph Jewell*						
14:50 - 15:20	Coffee Break, 49 Level 3						
Thu 10 July 15:20 - 17:00							
	Room: 50-N201 **High Enthalpy Gas Dynamics** Chair: *Robert Macdermott*	Room: 50-N202 **Facilities and Instrumentation** Chair: *David Buttsworth*	Room: 50-T103 **Shock Waves in Liquids** Chair: *Kavitha Jayaram*	Room: 50-T105 **Shock/Boundary Layer Interaction** Chair: *Anand Veeraragavan*	Room: 50-S201 **Supersonic and Hypersonic Flows** Chair: *Dong He*	Room: 50-C207 **Detonation, Combustion and Ignition** Chair: *Zbigniew Walenta*	Room: 49-313A **Shock Wave Reflection, Interaction, and Focussing** Chair: *Randall Paton*
15:20	Numerical simulation of a three-dimensional relativistic astrophysical jet issuing from an Active galactic nuclei (274) *Ribhu Pal, Arnab Roy*	Miniaturisation of an Antenna for the X2 Expansion Tunnels Microwave Interferometry System (214) (S) *Sandy Goetjens, Toby Van Den Herik, Chris James*	Scaling of Flow Phenomena in Hypervelocity Water Entry (281) (S) *Joshua Smith, Monal Patel, Manuel Viqueira-Moreira, Matthew Sendrey, Premika Thasu, Bryan Schmidt, Christoph Brehm*	Time-Scale Aerodynamic Performance of NS-SDBD Plasma Actuation and Its Control of Small-Height Backward Step Separation in Transonic Flow (120) *Feng Ye, Jianlei Wang, Enbo Ju, Xuanshi Meng*	Numerical study on the longitudinal stability of the parallel-staged two-stage-to-orbit vehicle during hypersonic transverse stage separation (154) *Yue Wang, Yunpeng Wang, Yiming Liu*	Experimental Investigation of Detonation Wave Propagation and Interactions with Different Media (272) (S) *Edyta Dzieminska, Sanjeev Kumar Mall*	Numerical Simulation of Shock-Focusing in a 3-Wall 90 deg Corner with Hydrogen-Air Mixture (397) (S) *Henrik Thomas, Irenaus Wlokas, Andreas Kempf, Wojciech Rudy*
15:40	Numerical Investigation of Shock Stand-off Distance in Chlorine (429) (S) *Robert Watt, Rowan Gollan*	L1d Simulation of a Hydrogen Preheater for Supersonic Combustion Studies (444) *Ramprakash Ananthapadmanaban, David Mee*	Experimental Investigation of Hypervelocity Water Entry by Spherical Projectiles (196) (S) *Matthew Sendrey, Bryan Schmidt, Josh Smith, Premika Thasu*	Hypersonic Shock Wave/Boundary Layer Interactions on a Heated, Compliant Clamped-Free-Clamped-Free Panel (268) *Damon Kirkpatrick, Andrew Neely, Dylan Dooner, Charlie Hoke, Timothy Beberniss, David Buttsworth*	Experimental Investigation on 25-50 deg Double-cone Flow at Mach 6 (117) *Xin Li, Zongnan Chen, Jiaao Hao, Jiaao Hao*	Numerical research on droplet deformation characteristics within the gaseous multi-dimensional detonation flow-field (63) (S) *Hanbing Zou, Yijue Wei, Sheng Xu, Bing Wang*	Shocks Interactions and Reflections During Startup Process of An Hypersonic Air-Breathing Vehicle (72) *Eran Arad, Omri Ram, Yoav Gichon*
16:00	Temperature measurements in cylindrical shock wave convergence (151) (S) *Sourabh Bhardwaj, Nicholas Apazidis, Michael Liverts*	Multi-Fidelity Theory and Simulation of High-Enthalpy Shock Tubes (279) *Aaron Larsen, Kyle Hanquist*	Shock Wave Dynamics in Underwater Copper Wire Explosions (377) *Michael Liverts, Francesc Hern-Ndez Garcia, SebastiN Rojas Mata*	Hypersonic Shock Wave-Boundary Layer Interaction Experiments on a Cone-Slice-Wedge over a Range of Enthalpies (434) *Justin Wagner, Elijah Jans, Kyle Daniel, William Swain, Kyle Lynch*	Conjugate Heat Transfer Simulation of High Enthalpy Reacting Flows over a Double Wedge at Mach 7 (364) (S) *Ladin Uluakan, Bayram Celik*	Experimental Investigation of a Reacting Bidisperse Particle Curtain Under Extreme Conditions (439) - WITHDRAWN *Juan Rubio, Kyle Daniel, Justin Wagner*	Shock Interactions on Asymmetric V-shaped Blunt Leading Edges (357) (S) *Yu Chen, Zhufei Li*
16:20	Thermochemical Nonequilibrium Study on the JFX Nozzle Expanding Air Flows (51) (S) *Tia Chen, Sangdi Gu, Zhuo Liu, Chihyung Wen, Kai Luo, Fei Li, Qiu Wang, Renjie Li*	Development of Optical, Through-model, Temperature-based Surface Heat Flux Sensor for Hypervelocity Flows (207) (S) *Chengxin Yu, David Gildfind, David Mee, Tim Mcintyre, Tim Mcintyre*	Study on Underwater Wave Phenomena and Bubble Formation Induced by Impact Bending of Bar Materials in Contact with the Water Surface (71) *Akihisa Abe, Jinichi Koue, Takehiro Fujimoto*	Analysis of large-scale spanwise motions of turbulent separation bubbles (46) (S) *Zhen Zhang, Xin Li, Jiaao Hao, Jiaao Hao*	Numerical studies of high enthalpy flow in micro-scale shocktube (244) *Ribhu Pal, Debayan Das, Arnab Roy, Lars Jepsen, Walter Garen, Ulrich Teubner*	Molecular level analysis of induction zone length in hydrogen-air detonations with increasing Mach number using DSMC (43) *Shrey Trivedi, John K. Harvey, Jacqueline H. Chen*	Unsteady Shock Wave Reflections over curved coupled geometries (146) - NEW TITLE *Vedant Vijaykrishnan, I.V. Thara Reshma, C. Anbu Serene Raj, S. Vishnu Prasad, P. Vinoth, G. Rajesh*
16:40	Dissociation in the Stagnation Point Boundary Layer (223) *Sangdi Gu*	Implementation of Ionisation Probe Based Shock Speed Sensor in the X2 Expansion Tube (147) *Callagan Wing, Chris James, Daisy-May Joslyn*	Pseudosteady shock refractions over air-silicon oil and air-glycerin interfaces (330) *Somesh Putti, Md Asif, Anbu Serene Raj C, Mano M, Rajesh G*	Control of Swept Shock Wave / Boundary Layer Interactions using Air-Jet Vortex Generators (351) *Bhavesh Tongaria, Deepak Prema Ramaswamy, Sriram Rengarajan, Anne-Marie Schreyer*	On the transition reversal on a blunted plate at Mach 4 (199) (S) *Yuen Lee, Jiaao Hao*	Towards high-speed metal combustion (277) *Nicholas Kanizaj, Samuel Cousens, Donna Capararo*	Synchrotron Radiography of Wire-Driven Cylindrical and Semi-Cylindrical Shock Waves Interacting with a Bubble (128) (S) *Francesc Hernandez Garcia, Nicholas Apazidis, Michael Liverts*
18:00 - 21:00	Banquet, Sofitel (Brisbane City) in the Ballroom Le Grand						

Friday 11 July

Fri 11 July 08:40 - 10:00

	Room: 50-N201 **Propulsion** Chair: *Andrew Neely*	Room: 50-N202 **Facilities and Instrumentation** Chair: *David Mee* (NEW CHAIR)	Room: 50-T103 **Shock Waves in Internal Flows /Multiphase Flows** Chair: *Rajesh Gopalapillai*	Room: 50-T105 **Richtmyer-Meshkov Instability** Chair: *Vincent Wheatley*	Room: 50-S201 **Supersonic and Hypersonic Flows** Chair: *Karthick Sengunthapuram Kandasamy*	Room: 50-C207 **Shock/Boundary Layer Interaction** Chair: *Ramprakash Ananthapadmanaban*	Room: 49-313A **Shock Wave Reflection, Interaction, and Focussing** Chair: *Harald Kleine*
8:40	Supersonic Combustor Test Facility Providing Clean Air and Its Spatial Flow Uniformity Measurement (426) *Inyoung Yang, Sang-Hun Lee, Bo-Yeon Kim, Kyung-Won Park, Hyun-Seung Lee*	Qualification of the NASA Ames Low Density Shock Tube (104) *Brett Cruden, Andrea Fagnani*	Characterization of Twin Impinging Liquid Jet at Supersonic Air Crossflow (378) - REVISED TIME *Srinivasa Narasimman V B*	Time-Resolved Particle Image Velocimetry Measurements of the Rarefaction-Driven Rayleigh-Taylor Instability (242) *Weston Meyers, Kevin Ferguson, Jeffrey Jacobs*	Base Pressure Establishment Time of Slender Sphere-Cones in Hypersonic Flow (105) (S) *Liam Mcquellin, Luke Doherty*	Simultaneous Fluid and Structure Measurements of an Impinging Shock-Boundary Layer Interaction in Mach 4 Flow (161) (S) *Alex Acosta, Ying Luo, Joanna Austin*	Investigating the Dynamics of Transmitted and Reflected Shock Waves in Converging Ducts with Varying Contraction Geometries (77) (S) *Yoav Gichon, Hemanth Chandravamsi, Omri Ram*
9:00	Performance Evaluation of Disk-Type Rotating Detonation Engine for a Model Rocket Launch (384) (S) *Shinji Mabuchi, Toshiharu Mizukaki, Rintaro Suzuki, Naoki Okamoto, Michael Kawalec, Edyta Dzieminska, Mizuki Toyoda*	The Detonation Research Test Facility Going Upscale (133) *Elaine Oran, Scott Jackson*	Effect of the Initial Diaphragm Opening Phase on the Shock Parameters Obtained in a Single-Diaphragm Shock Tube (349) - REVISED TIME (S) *Janardhanraj Subburaj, Touqueer Anwar Kashif, Aamir Farooq*	Suppression of hydrodynamic instability at interfaces with various Atwood numbers via a same-side second shock impact (136) (S) *Yinuo Xing, Zhigang Zhai, Xisheng Luo, He Wang*	Experimental Investigation of Pressure Distribution on an Osculating Cone Waverider (118) (S) *P V Karthikeya Bharadwaj*	Effect of dynamic variation in shock strength on shock-induced Fluid-Structure Interaction (406) (S) *Rahul Kapse*	Shock-particle interaction in convergent geometry; first results (152) (S) *Georges Jourdan, Baptiste Theurier, Christian Mariani, Marc Vandenboomgaerde*
9:20	Forced Dual-Mode Combustion in an Accelerator Scramjet Flowpath (290) *Tristan Vanyai, Damian Curran, Vincent Wheatley*	Development of Multiphase Shock Tube Facility and Shock Processing of Natural Sand from Australian Desert (91) *Dr. Jayaram Vishakantaiah, Nagaraj Mariyappa, Kavitha Jayaram*	Experimental Verification and Analysis of 3D Shock-surface-based Curved Shock Theory (26) - REVISED TIME (S) *Mengfei Zhang, Chongguang Shi, Yancheng You*	Effects of Mach Numbers on Reactive and Inert Shock-Induced Double-Layer Gas Cylinders (123) (S) *Xin Li, Chih-Yung Wen Wen, Jiaao Hao*	Exploring Control Strategy to Mitigate Unsteadiness in Hypersonic Cavity (297) *Md Gulam Sarwar, Soumya Ranjan Nanda, Mohammed Ibrahim Sugarno*	The effect of sweep angle on shock-induced cellular separation bubbles in wide-span 3D turbulent transonic aerofoil buffet (3) *David Lusher, Andrea Sansica*	A Study on Head-on-Head Collision of Expansion Waves (327) *Rajesh G, S Vishnu Prasad, Anbu Serene Raj C, Mano M, Vinoth P, Vinoth P*
9:40	Theoretical Analysis on the Performance of Ram-Rotor Detonation Engine (15) *Haocheng Wen, Bing Wang*	Experimental and Numerical Investigation of Shock Wave Formation and Propagation in a Miniature 20 mm Diaphragmless Shock Tube (346) (S) *Janardhanraj Subburaj, Touqueer Anwar Kashif, Serban Rotaru, Guido Dessy, Ahmed Habib, Mohanad Shamsan, Adolfo Sausa, Aamir Farooq*	Investigating the Relationship Between Cavity Shape and Flow Characteristics for Transonic Flow. (359) - REVISED TIME (S) *Anagha Kuniyil, Karthick Sk, Niranjan Ghaisas, Gnanaprakash K, Rajesh Kumar, Jaysinh J. Patel*	Shock-tube experiments on strong-shock-driven single-mode Richtmyer-Meshkov instability (141) *He Wang, Shuaishuai Jiang, Wei Cai, Ting Si, Xisheng Luo*		Three-dimensional Shockwave Boundary Layer Interactions (179) (S) *Raja Janmejay, Srisha Rao, Jagadeesh Gopalan*	Characterization of Edney Shock-Shock Interactions in Supersonic Flow (386) *Eryl Shaji, Muruganandam Tm, Sebastian Ds, Madhura Sabhahit, Snega Manjini*
10:00 - 11:00	Room: 49-200 Plenary 7: **Oren Petel**, Advances in experimental methodologies to investigate blast and impact trauma Chair: *Martin Brouillette*						
11:00 - 11:30	Coffee Break, 49 Level 3						
11:30 - 12:30	Room: 49-200 Plenary 8: **Vincent Wheatley**, Development of an accelerator Scramjet for access-to-space Chair: *Frank Lu*						
12:30 - 13:50	Lunch, 49 Level 3						

Fri 11 July 13:50 - 14:50

	Room: 50-N201 **High Enthalpy Gas Dynamics** Chair: *Zonglin Jiang*	Room: 50-N202 **Diagnostics and Flow Visualization** Chair: *Tim McIntyre* (NEW CHAIR)	Room: 50-T103 **Shock Wave Interaction with Various Media** Chair: *Pavel Utkin*	Room: 50-T105 **Shock/Boundary Layer Interaction** Chair: *Kyle Daniel*	Room: 50-S201 **Supersonic and Hypersonic Flows** Chair: *James Threadgill*	Room: 50-C207 **Detonation, Combustion and Ignition** Chair: *Elangannan Arunan*	Room: 49-313A **Plasmadynamics and Magnetohydrodynamics** Chair: *David Gildfind*
13:50	Numerical Investigations of Nonequilibrium De-excitation Using a Collisional-Radiative Model in Nitrogen (50) (S) *Zhuo Liu, Sangdi Gu, Chih-Yung Wen, Jiaao Hao*	Eight-Point Focused Laser Differential Interferometer for Fluctuation Measurements in the T4 Stalker Tube (421) *Ramprakash Ananthapadmanaban, Srinath Lakshma, David Mee, Ananthanarayanan Veeraragavan*	Explosively Driven Shock Tube and Schlieren Technique to Visualize Blast Wave Propagation through Different Material Interfaces (217) *Therese Schunck, Myriam Bastide, Dominique Eckenfels, Laurent Siniger, Thierry Ottie, Yannick Stehlin*	Experimental investigations of three-dimensional shock-wave/boundary-layer interactions at Mach 6 hypersonic flow (423) *Srinath Lakshman, Anand Veeraragavan, David Mee*	Force measurements on a free-flying cone/square pyramid model in a shock tunnel (367) *Shuto Yatsuyanagi, Hideyuki Tanno*	Combustor Length and Reactant Concentration Effects on Shuttling Transverse Detonation Wave Modes (30) *Xin Huang, Wenhao Xu, Po-Hsiung Chang, Zhen Wei Teo, Jiun-Ming Li, Chiang Juay Teo, Boo Cheong Khoo*	Study of the Stagnation Point Boundary Layer in Hypersonic Magnetohydrodynamic Flows (134) *Kai Luo, Danyang Li, Qiu Wang, Jinping Li, Wei Zhao*
14:10	Multi-Fidelity Modelling of Thermochemical Nonequilibrium in Oxygen Flows (288) (S) *Himanshu Khatri, Liwei Zhang*	Boundary Layer Velocity Measurements in a Detonation-Driven Hypersonic Shock Tunnel (119) *Tianshu Wu, Yupeng Li, Jiwei Li, Yejun Wang, Yutao Huo, Chenglong Guo, Qiu Wang, Wei Zhao*	Numerical Analysis of Shock-Tandem Bubble Interaction - Insights from Lamb Vector Divergence, Pressure Contours, and Vorticity Transport Equation (246) (S) *Nithin Krishnan S, Ribhu Pal, Arnab Roy, Parthasarathi Ghosh*	Shock-Boundary Layer Interactions in Double Ramp Flow in the Presence of Curvature (410) - REVISED TIME *Abhinav Aggarwal, Rajesh Ranjan*	The Role of Junction Curvature in the Origin of Heat Streaks on Swept Geometries in Hypersonic Flows (291) (S) *Jacob Currin, Jacob Smotzer*	Large-Eddy Simulation of Sound Generation within a Scramjet Engine (310) (S) *Ramandeep Kaur*	Computational Investigation of an Air-Breathing Lorentz Engine (ABLE) for Hypersonic Flight (425) (S) *Roshan John Kurian, Vincent Wheatley, Alexis Lefevre, Robert Watt, Nicholas Gibbons*
14:30	Investigation of shock-shock interaction in variable Mach number flow with symmetric and asymmetric shock generators (355) - REVISED TIME *Vijayakrishnan Venkatesan, Muruganandam T. M.*			Massively-Separated Turbulent Shock-Wave/Boundary-Layer Interactions in Hypersonic Flows with Varying Mach and Reynold Numbers (234) - WITHDRAWN *Romie Bura, Ahmad Riyadl*	Co-linear Focused Laser Differential Interferometry and High Speed Schlieren Measurements of Supersonic Cylinder Near Wake (160) *Ying Luo, Alex Acosta, Joanna Austin, Hans Hornung*		Extension of thermionic electron emission boundary conditions for hypersonic flow to the presence of a near-surface electron sheath (204) (S) *Shahzeb Imran, Vincent Wheatley, Dale Pullin*
14:50 - 15:20	Coffee Break, 49 Level 3						
15:20 - 15:40	Farewell, 49-200						