28th INTERNATIONAL COLLOQUIUM ON THE DYNAMICS OF EXPLOSIONS AND REACTIVE SYSTEMS

JUNE 19 – 24, 2022 NAPLES, ITALY

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Monday, June 20th, 2022 (morning sessions)				
8:30 9:00	**Opening ceremony and Registrations**			
9:00 10:00	**Plenary Lecture (Aula Magna):** ***Prof. Jiro Kasahara*** *(Nagoya University, Japan)* **Title: Fundamental Research of Detonation Engine and Its Space Flight Experiment Using Sounding Rocket** *Chairs:* ***A. Matsuo and M. Gamba***			
10:00 10:10	Break (Transition to Morning Sessions)			
	Aula Magna (1st Floor)	Aula C (1st Floor)	Aula D (2nd Floor)	Aula E (2nd Floor)
Topics	**RDE I** *Chair:* ***T. Endo***	**Detonation Modelling I** *Chair:* ***L. Bauwens***	**Gas and Dust Explosion I** *Chair:* ***M. Kuznetsov***	**Chemical Kinetics I** *Chair:* ***M. Fikri***
10:10 10:35	**Preliminary Experimental Study of Propulsive Performance of Hollow Rocket Rotating Detonation Engines with Designed Laval Nozzle (137)** *Y. Zhang, J.Z. Ma, J.P. Wang, S. Zhang*	**On the Predicability of Weakly Confined Gaseous Detonations Using the Straight Streamline Approximation (191)** *S.A. Lalchandani, M. Radulescu, Z. Hong*	**On the Reactivity of Ethylene/Nitrogen/ Oxygen (38)** *G. Pio, S. Renda, V. Palma, E. Salzano*	**Ignition Delay Time and Laminar Flame Speed Measurements of a Li-ion Battery Electrolyte: Ethyl-Methyl-Carbonate (46)** *O. Mathieu, Y. Almarzooq, E. Petersen*
10:35 11:00	**Experimental Investigation on the Coal Powder Rotating Detonation Engine (247)** *X. Ni, H. Xu, C. Weng, X. Su, B. Xiao, F. Zhang, Y. Luo*	**Numerical Investigation of One-dimensional Pulsating Detonations Using Fickett's Detonation Analogue with Chain-Branching Kinetics (234)** *A. Sow, M.I. Radulescu*	**Characterizing the Reactivity of Large-Scale Dust Explosions (114)** *C. R.L. Bauwens, L.R. Boeck, S. Dorofeev*	**Global Quasi-Linearization (GQL) for Model Reduction of Reaction Diffusion Systems (68)** *V. Bykov, C.Yu, U. Maas, V. Gol' dshtein*
11:00 11:25	**Numerical Analysis of the Influence of Mixing on Detonation Wave Propagation inside a Rotating Detonation Engine by Using Linear Detonation Channel (78)** *F. Wang, T. Mizukaki, S. Matsuyama*	**Characteristic Analysis for 2D Steady Supersonic Reacting Flow: Effect of Confinement on Detonation Flows (127)** *M. Short, C. Chiquete*	**Large-Scale Confined Gas and Dust Explosions with Elevated Initial Turbulence (108)** *L.R. Boeck, C.R.L Bauwens, S. Dorofeev*	**Ignition delay time measurements of methane/ethane/propane mixtures with addition of ozone (178)** *S. Drost, R. Schießl, U. Maas*

11:25 11:50	**Break and Work-In-Progress Posters Session I (Hall of 1th floor)**			
Topics	**Gas and Dust Explosion II** *Chair: **C.R. Bauwens***	**Condensed Phase Detonation I** *Chair: **M. Short***	**RDE II** *Chair: **K. Ahmed***	**Chemical Kinetics II** *Chair: **P. Glarborg***
11:50 12:15	**Propagation of Methane Detonation in Coal Dust Suspensions with Different Concentrations** **(62)** *J. Shi, Y. Xu, W. Ren, H. Zhang*	**Detonation Performance Experiments and Modeling for the High Explosive PETN** **(71)** *E.K. Anderson, C. Chiquete, R. Chicas, S.I. Jackson*	**Simulations of Ethylene-Oxygen Rotating Detonation Waves under Different Local Equivalence Ratio** **(85)** *H. Peng, R. Deiterding*	**Effects of Di(2,2,2-trifluoroethyl) Carbonate on the Ignition Delay Time and Laminar Flame Speed of H2 and CH4** **(258)** *M. Turner, D. Mohr, P. Dievart, L. Catoire, E. Petersen, O. Mathieu*
12:15 12:40	**Gravity Effect on Steady, 1-D Propagation through Dust Clouds** **(83)** *K. Kuwana, S. Yazaki, W. Kim, T. Mogi, R. Dobashi*	**Detonation Performance Model Calibration and Validation of the HMX-Based High Explosive PBX 9501** **(132)** *C. Chiquete, S.I. Jackson, E.K. Anderson, M. Short, S. Voelkel, Von H. Whitley*	**Three-Dimensional Numerical Investigation on the Effect of Injector Configuration in Rotating Detonation Engine** **(210)** *T. Sada, A. Matsuo, E. Shima, H. Watanabe, A. Kawasaki, K. Matsuoka, J. Kasahara*	**Sensitivity of Reaction-Diffusion Manifolds (REDIM) for Hydrogen Counter-diffusion Flames** **(161)** *U. Maas, V. Bykov*
12:40 13:05	**Expansion Waves Behaviour during Liquified CO2 Depressurization in a Divergent Cross-Section Vessel** **(63)** *O.K. M.Ibrahim, P.M. Hansen, D. Bjerketvedt, K. Vågsæther*	**Towards Finite Rate Chemical Kinetics Modeling of Detonation Afterburn Using the BKW Equation of State** **(142)** *M.P. Clay, B. Taylor, R. Houim*	**Flow Acceleration in an RDRE with Gradual Chamber Constriction** **(22)** *M.C. Ross, J. Burr, A. Batista, C. Lietz*	**Influence of Thermochemistry on Prompt NO formation in Flames** **(10)** *K.P. Shrestha, L. Seidel, B.R. Giri, T. Zeuch, F. Mauss*
13:05 14:35	**Lunch (Biblioteca Gasparini, 2nd Floor)**			

Monday, June 20th, 2022 (afternoon sessions)

Topics	Aula Magna (1st Floor) **IC Engines** *Chair: **U. Maas***	Aula C (1st Floor) **Detonation Propagation** *Chair: **H.D. Ng***	Aula D (2nd Floor) **RDE III** *Chair: **E. Gutmark***	Aula E (2nd Floor) **Chemical Kinetics III** *Chair: **O. Mathieu***
14:35 15:00	**0D Laminar Flame Speed Model for Methane Lean Mixture in Dual Fuel Combustion (109)** R. De Robbio, E. Mancaruso, B.M. Vaglieco, S. Artham, J. Martín	**Elliptical Experimental Detonation (58)** *R. Babin, A. Chinnayya, V. Rodriguez*	**Study of Rotating Detonation Combustor Dynamics During Changes in Operating Mode (237)** *J. Shepard, A. Feleo, M. Gamba*	**The Impact of H2 and CO on the NH3 / NO / O2 Chemistry - a Step towards a Predictive Tool for NH3 Oxidation (103)** *P. Glarborg, M.U. Alzueta*
15:00 15:25	**Statistics of Flame Topology in Turbulent Spray Flame Water Droplet Interaction (26)** R. Concetti, J. Hasslberger, N. Chakraborty, M. Klein	**Study of Imploding Detonations with High-speed Videography and Digital Open-shutter Photography (91)** *R.S. Rodriguez A. Higgins, J. Loiseau*	**The Effect of Fuel Partial Premixing on Rotating Detonation Waves (111)** *R.F. Burke, T. Rezzag, A.R. Kotler, K. Ahmed*	**Thermal Decomposition-induced Multi-stage Reaction of Diethyl Carbonate Exa-mined by a Micro Flow Reactor with a Controlled Temperature Profile (167)** *K. Kanayama, S. Takahashi, S. Morikura, H. Nakamura, T. Tezuka, K. Maruta*
15:25 15:50	**Effect of Jet Configuration on Knock Characteristics Using a Rapid Compression Machine (80)** *W. Liu, Y. Qi, R. Zhang, Q. Zhang, Z. Wang*	**Towards Laser-Induced Fluorescence of Nitric Oxide in Detonation (164)** *K.P. Chatelain, S.B. Rojas Chavez, J. Vargas, D.A. Lacoste*	**Numerical Analysis on Pressure Gain of Rotating Detonation Engine Using H2-O2 Gases: Influence of Number of Injector (218)** *A.K. Hayashi, K. Yoshidomi, K. Ozawa, N. Tsuboi, H. Kawashima*	**Modeling Soot Formation in LES of Turbulent Flames Using Virtual Chemistry (89)** *H. Maldonado Colman, D. Veynante, N. Darabiha, B. Fiorina*
15:50 16:15	**The Effect of the Ignition Energy and Mixture Energy Density on the Detonation Onset in Internal Combustion Engines (177)** *H. Xu, C. Weng, C. Yao*	**Multiple-view Imaging of a Small-diameter Detonation Tube at 5 MHz (40)** *L. Thomas, F. Schauer, D. Cyrol, B. Sell*	**Initiation Dynamics of Rotating Detonation Engines using C2H4-O2 Mixtures (227)** *S.F. Connolly-Boutin, M. Ghali, R. Gilot, J. Loiseau, A. Higgins, C.B. Kiyanda*	**Large Eddy Simulation of a Multi-Regime Burner Using Virtual Chemistry (90)** *T.P. Luu, B. Fiorina, N. Darabiha*

16:15 16:40	Break and Work-In-Progress Posters Session I (Hall of 1th floor)			
Topics	**Chemical Kinetics IV** *Chair: **B. Fiorina***	**Detonation Structure I** *Chair: **R. Zitoun***	**Flame Acceleration & DDT I** *Chair: **S. Dorofeev***	**Explosion Safety I** *Chair: **E. Salzano***
16:40 17:05	**Community Analysis of Bifurcation Maps of Diluted Hydrogen Combustion in WSFRs** **(129)** *J. He, Y. Li, L. Ji, L. Acampora, F.S. Marra*	**Cell Structure and Global Heat Release in 2D and 3D JP10-Air Detonations in Narrow Channels** **(186)** *P.A. Meagher, X. Shi, X. Zhao, S.S. Dammati, A. Poludnenko, H. Wang*	**DDT Run-up Distance Measured by Visualization of an Obstructed Tube** **(256)** *S. Shervin Hashemi Mehr, G. Ciccarelli*	**The Bologna LPG BLEVE** **(197)** *G. Cocchi*
17:05 17:30	**Validation of the Reaction-Diffusion Manifolds (REDIMs) Reduced Chemistry for the Non-premixed CH4 Counter-flow Diffusion Flames under MILD Condition** **(208)** *Y. Sun*	**Towards the Converged Von Neuman Peak Pressure using Fine Scale Simulation of Detonation Cell Structure** **(200)** *J. Ryu, M. Niyasdeen, J.Y. Choi*	**Visualization of Deflagration-to-detonation Transition in a Channel with Rough Wall** **(163)** *S. Maeda, M. Irokawa, D. Taneichi, T. Obara*	**Numerical Simulation of the effects of a muffler on shock sound mitigation** **(50)** *A. Sethu Venkataraman, E. Oran*
17:30 17:55	**Oscillatory Combustion Kinetic Analysis and Reduction through Functional Weight Coefficient** **(126)** *S. Liang, L. Ji, D. Zhao*	**Predictability of H2/O2/Ar/He Detonations in Thin Channels: New Experiments and Improvements in the Quasi-two-dimensional Mode** **(175)** *F. Zangene, A. Sow, M. Radulescu*	**Plasma-assisted Deflagration to Detonation Transition of Dimethyl Ether in a Microchannel** **(235)** *M. Vorenkamp, T. Chen, S. Steinmetz, C. Kliewer, A. Starikovskiy, Y. Ju*	**Experimental study on turbulent flame speed of H2-CO/air mixtures relevant to late phase accident scenario** **(173)** *A. Desclaux, M. Idir, A. Comandini, A. Bleyer, A. Bentaib, N. Chaumeix*
17:55	**Adjourn**			

Work in Progress Posters Session I

(274) Preliminary investigations of the detonation-bow shock interaction: a pictorial essay
A.S. Venkataraman, E.S. Oran

(287) The comparison of Favre average procedure for the gaseous detonation from Eulerian and Lagrangian point of view
H. Watanabe, A. Matsuo, A. Chinnayya, N. Itouyama, A. Kawasaki, K. Matsuoka, J. Kasahara

(283) Numerical investigation of deflagration to detonation transition in smooth pipes
T. Alzer, L. Engelmann, M. Sens, A. Kempf, I. Wlokas

(272) Recent Research on Rotating Detonation Engines supplied by liquid propellants at the Łukasiewicz Institute of Aviation
M. Kawalec, P. Wolański, W. Perkowski, A. Bilar

(284) Water-Cooled Rotating Detonation Engine
T. Fukuda, K. Sato, T. Nagao, M. Itoh, E. Dzieminska

(279) Cellular structure of helium detonation as a trigger of sub-Chandrasekhar mass Type Ia supernovae
K. Iwata, K. Maeda

(282) Heat Radiation Losses from Propagating Spherical Flames of Mixtures with Methane, Hydrogen, Carbon Monoxide and Air
A. Roque, A. Hamadi, M. Idir, A. Comandini, N. Chaumeix

(293) Onset of Cellular Instability in Spherically Expanding Flames
M. Turner, E. Petersen

Notes

Tuesday, June 21st, 2022 (morning sessions)				
9:00 10:00	**Plenary Lecture (Aula Magna): *Prof. Gaby Ciccarelli* (Queen's University, Canada)** **Title: Flame Acceleration and Deflagration-to-Detonation Transition in a Confined Geometry** *Chairs:* ***H.D. Ng and A. Matsuo***			
10:00 10:10	Break (Transition to Morning Sessions)			
	Aula Magna (1st Floor)	Aula C (1st Floor)	Aula D (2nd Floor)	Aula E (2nd Floor)
Topics	**Detonation Modelling II** *Chair:* ***G. Vignat***	**Detonation Structure II** *Chair:* ***N. Tsuboi***	**Stability I** *Chair:* ***M. Liberman***	**Laminar Flame I** *Chair:* ***Y. Ju***
10:10 10:35	**Uncertainty Quantification for the Real Gas Model of Steady Planar Detonation** **(18)** *Z. Weng, R. Mevel*	**Experimental Analysis of Cellular Detonations: a Discussion on Regularity and Three-dimensional Patterns** **(57)** *V. Monnier, V. Rodriguez, P. Vidal, R. Zitoun*	**Fractal-based RANS Modeling of Darrieus—Landau and Thermal-diffusive Instability Effects on Lean Hydrogen Flames** **(33)** *D. Zivkovic, T. Sattelmayer*	**A Study on the Effect of Ethanol Addition on Laminar Flame Speed of a Four-Component Gasoline Surrogate at Elevated Pressure and Temperature** **(56)** *Y. Almarzooq, E. Petersen, I. Schoegl*
10:35 11:00	**Detonation Propagation in the Inhomogeneous Mixtures with Periodic Reactant Concentration Gradient** **(12)** *Y. Wang, Z. Chen*	**Comparative Analysis of the ZND Detonation Structure in Hydrocarbon Fuels** **(245)** *C. Colby, A. Ghosh, S.S. Dammati, A. Poludnenko*	**Investigation of the Scale Similarity Principle for Subgrid Modelling of the Reactive Richtmyer-Meshkov Instability** **(23)** *M. Bambauer, J. Hasslberger, M. Klein*	**Experimental and Numerical Study on a Gasoline Surrogate Mixture** **(238)** *O. Mghanen, N. Chaumeix, M. Matrat, S. Chevillard, N. Obrecht*
11:00 11:25	**Unified Characteristic Relationships of Hydrogen-Oxygen-Argon Detonation Dynamics in Narrow Channels** **(145)** *Q. Xiao, C. Weng*	**Two-Dimensional Detonations in Ethylene-Air Mixtures with Multi-Step Chemistry** **(230)** *S.S. Dammati, A. Poludnenko*	**Numerical Investigation of Fuel Feed Line Instabilities and its Effects in the Partially Premixed Swirling Flame** **(159)** *J. Nam, J.J. Yoh*	**Chemiluminescence of Spherically Expanding Methane-Air Flames Doped with DMMP** **(140)** *M. Turner, P. Parajuli, W. Kulatilaka, E. Petersen*

11:25 11:50	Break and Work-In-Progress Posters Session II (Hall of 1th floor)			
Topics	**Laminar Flame II** *Chair: **G. Continillo***	**Detonation Structure III** *Chair: **R. Deiterding***	**Detonation Diffraction** *Chair: **K. Matsuoka***	**Stability II** *Chair: **T. Jaravel***
11:50 12:15	**Combustion Characteristics of Butane in a Meso-scale Burner with Ordered Porous Media** **(255)** *X. Chen, J. Li*	**Detonation Structural Response to Multi-dimensional Confinement** **(217)** *J. Crane, J.T. Lipkowicz, X. Shi, I. Wlokas,A. Kempf, H. Wang*	**Numerical Study on Re-Initiation of Detonation Propagating through Double Slits in a Planar Channel** **(101)** *D. Jun, B.J. Lee*	**Oxygen Enrichment Effect on the Stability of Turbulent Diffusion Biogas Flames** **(213)** *S. Fabbro, M. Tkach, M. Birouk*
12:15 12:40	**Analysis of Chemical-Induced Irreversibility in Premixed Counterflow CH4/CO/Air Flame** **(168)** *C.R. Yu, C.Y. Wu*	**Dynamics and Properties of 2D vs. 3D Ethylene-Air Detonations** **(151)** *S.S. Dammati, A. Poludnenko, R. Xu, X. Shi, H. Wang*	**Simplified Numerical Simulation of Gaseous Quasi-Detonation Diffraction from a Rough Walled Channel** **(192)** *C. Yan, X. Sun, X.C. Mi, H.D. Ng*	**Multiple Steady State Solutions for a Flame Stabilized behind a Highly Conductive Bluff Body** **(11)** *V.N. Kurdyumov, C. Jimenez*
12:40 13:05		**Numerical Analysis on Ammonia / Hydrogen / Air Detonation Using Detailed Chemical Reaction model** **(94)** *G. Inoue, N. Tsuboi, K. Ozawa, A.K. Hayashi*	**Data-driven Modeling of Reflection Point Distance Relevant to Diffracting Detonation Wave by using Machine Learning** **(246)** *A. Kawasaki, H. Hasegawa, H. Sun, H. Watanabe, N. Itouyama, K. Matsuoka, J. Kasahara, A. Matsuo, I. Funaki*	
13:05 14:35	Lunch (Biblioteca Gasparini, 2nd Floor)			

Tuesday, June 21st, 2022 (afternoon sessions)				
	Aula Magna (1st Floor)	Aula C (1st Floor)	Aula D (2nd Floor)	Aula E (2nd Floor)
Topics	**RDE IV** *Chair: **M. Kawalec***	**Detonation Structure IV** *Chair: **M. Radulescu***	**Multiphase I** *Chair: **J. Yoh***	**Laminar Flame III** *Chair: **H. Wang***
14:35 15:00	**Active Direction Control in Rotating Detonation Combustor** **(104)** *Z. Sheng, M. Cheng, D. Shen, K. Wu, J.P. Wang*	**An Investigation of the Detonation Jetting Phenomenon** **(120)** *R. Hytovick, R.F. Burke, T. Rezzag, K. Ahmed*	**Shock Interaction at Mach 4 of a Water and Fuel Droplet** **(244)** *F. Virot, J.-L. Rullier, D. Hébert*	**Experimental Study of Early-Stage Dynamics of the Ascending and Descending Laminar Hydrogen-Air Flames in Vertical Closed Rectangular Tube** **(183)** *N.B. Anikin, I.A. Kirillov*
15:00 15:25	**Experimental Study on the Aluminum Powder Rotating Detonation Engine** **(190)** *H. Xu, C. Weng, Q. Zheng*	**Forward Jetting Phenomenon in Detonations** **(232)** *P.A. Meagher, X. Shi, J. Crane, X. Zhao, A. Poludnenko, H. Wang*	**High-fidelity Simulations of Liquid-gas Colliding Jets Impacted by a Detonation Wave** **(28)** *R.J. Bielawski, S. Prakash, V. Raman*	**Laminar Burning Velocity and Adiabatic Flame Temperature of Biogas/Air Mixture at various CO2 Concentrations** **(152)** *A. Ghabi, T. Boushaki, P. Escot Boucanegra, E. Robert, B. Sarh*
15:25 15:50	**Numerical Investigation of the Effect of Ozone Addition on Detonation in the Two-dimensional RDE Chamber** **(207)** *R. Tanaka, A. Matsuo, E. Shima, H. Watanabe, A. Kawasaki, K. Matsuoka, J. Kasahara*	**Experimental Research On The Biogas – Oxygen Mixture Detonation Cell Size** **(205)** *S. Siatkowski, K. Wacko, J. Kindracki*	**A Computational Model for Single Iron Particle Combustion in Liquid-Phase Droplets** **(96)** *A. Fujinawa, X.C. Mi, J. Jean-Philippe, J. Bergthorson*	**Flame-Acoustics Interaction of Flames Propagating in a Narrow Duct: Effect of Heat Losses and Lewis Number** **(144)** *C. Jimenez, V.N. Kurdyumov*
15:50 16:15	**Effects of Mixing Level and Temperature of Injection in Rotating Detonative Combustion** **(224)** *C. Wang, K. Yao, H. Teng, Y. Wang, C. Tian*	**On Cellular Multiplicity of Detonations in Confined Channels** **(222)** *X. Shi, P.A. Meagher, J. Crane, S.S. Dammati, X. Zhao, A. Poludnenko, H. Wang*	**On the Critical Conditions for Thermal Runaway of Fine Iron Particles** **(97)** *X.C. Mi, A. Fujinawa, J. Bergthorson*	**Evolution of Acoustic Waves in High-Pressure Compressible Counterflow Diffusion Flames** **(48)** *G. Arumapperuma, M.X. Yao, J.P. Hickey, W. Han*

16:15 16:40	**Break and Work-In-Progress Posters Session II (Hall of 1th floor)**			
Topics	**Multiphase II** *Chair: **X.C. Mi***	**Detonation Interface Interaction** *Chair: **V. Rodriguez***	**RDE V** *Chair: **C. Stevens***	**Laminar Flame IV** *Chair: **N. Darabiha***
16:40 17:05	**Mixture Distribution of Solid-Gas-Two-Phase Flow for Gaseous Detonation with Aluminium Particles** **(214)** *R. Shimizu, T. Mizukaki*	**Detonation Propagation in a Layer Laterally Confined by Combustion Products** **(226)** *K. Cheevers, M. Raut, S.A. Lalchandani, Z. Hong, M. Radulescu*	**An Explanatory Model for the Multi-Wave Dynamics in Rotating Detonation Engines** **(70)** *C.R. Whitman, X.C. Mi, A. Higgins, C.B. Kiyanda*	**Early Stages of Flame Dynamics in Tubes and Mechanism of Tulip Flame Formation** **(9)** *M.A. Liberman, C. Qian, C. Wang*
17:05 17:30	**Morphology-independent Measurement of Iron Particle Burn Time** **(270)** *D. Ning, Y. Shoshin, J.A. van Oijen, G. Finotello, L.P.H. de Goey*	**Detonation Propagation in a Semi-confined Mixture with a Diffuse Interface** **(249)** *M. McLoughlin, V. Yousefi Asli, G. Ciccarelli*	**Acceleration of Burned gas to Supersonic in a Throatless Rotating Detonation Engine** **(160)** *K. Nakata, K. Ota, S. Ito, K. Ishihara, K. Goto, N. Itouyama, H. Watanabe, A. Kawasaki, K. Matsuoka, J. Kasahara, A. Matsuo, I. Funaki, K. Higashino, J. Braun, T. Meyer, G. Paniagua*	**CFD Modeling of Pressurized Laminar Coflow (Non-premixed) Diffusion Flames with Water Addition** **(162)** *H, Girodon, D. Dunn-Rankin, Y.C. Chien*
17:30 17:55		**Interaction of Detonation Waves with Turbulent Layers** **(242)** *B. Marjaba, H. Fazal, C.B. Kiyanda*	**Propagation of Gaseous Detonations in High Aspect Ratio Planar Curved Channels** **(13)** *M.L. Fotia, J. Hoke, R.J. Hencel, A. Schumaker*	**A Level-set Transport Equation for Tracking Self-ignition Fronts in Hydrogen-Air Mixture** **(158)** *C. Siddappa, Z. Bouali, V. Robin*
17:55	**Adjourn**			
19:00	**Young Researcher' s Night**			

Work in Progress Posters Session II

(280) Metal Combustion in Composite Solid Propellants
J.C. Thomas, F.A. Rodriguez, K. Herder, G. Lukasik, W. Kulatilaka, E. Petersen

(281) Comparison of Hand and Resonant Acoustic Mixing of AP/HTPB Propellants
F.A. Rodriguez, J.C. Thomas, A. Hong, E. Petersen

(290) Experimental Study of Gasification of Argan Nut Shell and Olives Pomace. Syngas Flame Characteristics
B. Sarh

(291) Study of the Oxidation and Pyrolysis of Lubricants at High Temperatures
R. Juarez, N. Gutierrez, E.L. Petersen

(269) Investigation of Lower Explosion Limit of Hybrid Mixtures in a 20 L-sphere
V. Heilmann, S. Zakel

(276) Experimental study on the performance of the standardized test method for detonation flame arresters
L. Ruwe, T. Heidermann, M. Kreißig, H. Kant, D. Schmidt, F. Gutte, D. Bartsch, P. Bosse, A. Lucassen

(285) Study of Flammability Domain of H2/CO Mixtures at Conditions Representative of the Late Phase of a Severe Accident in a PWR
L. Vastier, S. Nagaraju, A. Desclaux, A. Comandini, A. Bentaib, N. Chaumeix

(288) Experimental study on expanding spherical flames of H2/CO mixtures at O2 reduced conditions
M. Bouton, O. Mghanen, A. Desclaux, A. Comandini, A. Bentaib, N. Chaumeix

Notes

Wednesday, June 22nd, 2022 (morning sessions)				
9:00 10:00	**Plenary Lecture (Aula Magna): Prof. Benoît Fiorina (Université Paris-Saclay, CNRS, Laboratoire EM2C, France)** **Title: Including Detailed Chemical Properties in the Modeling of Emerging Turbulent Combustion Systems** *Chair:* ***A. Comandini and H.D. Ng***			
10:00 10:10	Break (Transition to Morning Sessions)			
	Aula Magna (1st Floor)	Aula C (1st Floor)	Aula D (2nd Floor)	Aula E (2nd Floor)
Topics	**Flame Dynamics & Stability** *Chair:* ***U. Riedel***	**Dynamics of Reactive Supersonic Flows** *Chair:* ***V. Raman***	**Detonation Initiation & limits** *Chair:* ***S. Maeda***	**Ignition I** *Chair:* ***M.B. Luong***
10:10 10:35	**Isotope Effect on the Characteristics of the Flame-Ball-to-Deflagration. Transition in Ultra-Lean Hydrogen- and Deuterium-Air Mixtures in Horizontal Hele-Shaw Cell (216)** *I.A. Kirillov, V. Denisenko, V. Plaksin, A. Melikhov*	**Numerical Simulation of Laminar Premixed Hydrogen-Air Flame/Shock Interaction under Low-Pressure Conditions (72)** *E. Yhuel, G. Ribert, P. Domingo*	**Experimental Study on Detonation Wave Initiation by Reflected Blast Wave in Laser Ignition (179)** *T. Sato, K. Matsuoka, A. Kawasaki, N. Itouyama, H. Watanabe, J. Kasahara*	**Experimental and Numerical Study of Autoignition/Deflagration Transition Limit in an optical Rapid Compression Machine (155)** *H. Ossman, C. Strozzi, J. Sotton, M. Bellenoue*
10:35 11:00	**A Tsuji Burner in a Counterflow (264)** *B. Li, A.L. Sanchez, F. Williams*	**Stability Analysis of the Noh Problem for Reactive Shocks (265)** *C. Huete, A. Calvo-Rivera, A.L. Velikovich*	**The Critical Dynamics of Direct Initiation of Spherical Detonations (223)** *R. Hernández Sánchez, B. Denet, P. Clavin*	**Comparison between Laser Ignition and Spark-Plug Ignition of Flowing Propane-Air Mixtures (52)** *K. Eto, Y. Kojima, W. Kim, T. Johzaki, T. Endo*
11:00 11:25	**Scaling Laws for Velocity Dynamics of the Ultra-lean Hydrogen-Air Flames Expanding in Horizontal Cylindrical Hele-Shaw Cell (221)** *P.V. Moskalev, V.P. Denisenko, I.A. Kirillov*	**Numerical Study of Low-Frequency Supersonic Combustion Instability in a Hydrogen-fueled Scramjet Engine (199)** *S.M. Jeong, H.S. Han, E.S. Lee, J.-Y. Choi*	**A Three-step, Three-gamma Model for the Numerical Modeling of the Critical Height of the Propagation of Semi-confined Detonation Waves (59)** *S. Taileb, E. Rougon, V. Robin, V. Rodriguez, S. Lau-Chapdelaine, P. Vidal, J. Melguizo-Gavilanes, A. Chinnayya*	**Numerical Simulation of LOx/CH4 Supercritical Combustion in a non-Homogenous Mixture (84)** *F. Monnier, G. Ribert*

11:25 11:50	**Break**			
Topics	**Pressure-Gain Combustion** ***Chair: M. Gamba***	**Flame Acceleration & DDT II** ***Chair: J. Hasslberger***	**Detonation Modelling II** ***Chair: A. Chinnayya***	**Chemical Kinetics V** ***Chair: N. Chaumeix***
11:50 12:15	**Identification of Multiple Combustion Modes in Continuous Detonation Engines** **(87)** *J.Z. Ma, J.P. Wang*	**Critical Conditions for Flame Acceleration and DDT for Hydrogen-Air Mixtures at Cryogenic Temperatures** **(259)** *M. Kuznetsov, A. Denkevits, A. Friedrich, A. Veser*	**Shock Dynamics from Quenched Detonations: Diffraction and Gallop Problems** **(156)** *M.I. Radulescu*	**Improvement of the Global Quasi-Linearisation (GQL) Model Reduction Method** **(69)** *C. Yu, V. Bykov, U. Maas*
12:15 12:40	**TDLAS for Sensing Pre-vaporized Jet A-1 in Liquid-fuel Pressure Gain Combustion** **(31)** *P.H. Chang, N. Teo, J.M. Li, X. Huang, C.J. Teo, B.C. Khoo*	**On the Possibility of Non-dimensionalizing DDT Limits and Distances** **(67)** *V. Rodriguez, V. Monnier, P. Vidal, R. Zitoun*	**A Methodology to Develop Simplified Kinetic Schemes for Detonation Simulations** **(86)** *F. Veiga-Lopez, A. Chinnayya, J. Melguizo-Gavilanes*	**REDIM Reduced Modeling of Flame-Wall-Interactions of Premixed Natural Gas / Air Systems** **(172)** *C. Straßacker, U. Maas*
12:40 13:05	**Numerical Study on the Unsteady Rotating Detonation Flow-field Interacted with Turbine Guide Vane** **(102)** *D. Shen, M. Cheng, K. Wu, Z. Sheng, J.P. Wang*	**A One-dimensional Model for Deflagration-to-detonation Transition of an Elongated Flame** **(82)** *H. Tofailli, P. Clavin, G. Lodato, L. Vervisch*	**Modelling Detonation Reflection with Nonsteady Shock Change Equation** **(73)** *D.T. Schoeffler, J. Shepherd*	**Experimental Investigation of the Combustion Properties of a Representative Thermal Runaway Gas from Li-Ion Batteries** **(47)** *O. Mathieu, M. Turner, D. Mohr, J.C. Thomas, E. Petersen*
13:05 13:30		**An Experimentally Informed 1-D DDT Model for Smooth Narrow Channels** **(106)** *J. Melguizo-Gavilanes, L. Bauwens*	**Numerical Study of Detonation Propagation through a Gravity-driven Layer of Hydrogen-Oxygen over an Inert Gas** **(257)** *M. Menezes, S. Lau-Chapdelaine, G. Ciccarelli*	**Experimental and Numeric study on the Inhibition Properties of Novec** **(225)** *S. Nagaraju, S. Abid, A. Comandini, N. Chaumeix*
13:30	**Light Meal for Excursion**			
14:30 - **Wednesday Excursion**				

Thursday, June 23rd, 2022 (morning sessions)				
	Aula Magna (1st Floor)	Aula C (1st Floor)	Aula D (2nd Floor)	Aula E (2nd Floor)
Topics	**Explosion Safety II** *Chair:* ***K. Vågsæther***	**Flame Acceleration & DDT III** ***Chair: I.A. Kirillov***	**Turbulent Flames I** *Chair:* ***V. Bykov***	
9:00 9:25	**Shock Transmission from Detonating Mixtures in Open Tubes** **(124)** *J.C. Thomas, F.A. Rodriguez, D. Teitge, L. Kunka, N. Gaddis, Z. Browne, C. Ahumada, T. Balci, S.I. Jackson, E. Petersen, E. Oran*	**Detonability Enhancement by Use of a Nanosecond Plasma** **(219)** *M. Ali Cherif, V. Lafaurie, S. Starikovskaia, P. Vidal*	**Surface Density Function and its Evolution in Homogeneous and Inhomogeneous n-Heptane MILD Combustion** **(64)** *K. Abo-Amsha, N. Chakraborty*	
9:25 9:50	**Influence of Hemicylindrical Obstacle Scale and Length on an Impacting Blast Wave** **(181)** *R.N. Gavart, S. Trélat, M.-O. Sturtzer, N. Chaumeix*	**Thermochemical Aspects of Superknock Development in IC Engines** **(261)** *M.B. Luong, E. Tingas, H.G. Im*	**Flame Self-Interactions in Turbulent Homogeneous-Mixture n-heptane MILD Combustion** **(119)** *K. Abo-Amsha, N. Chakraborty*	
9:50 10:15	**REKO-Fire: New Facility to Investigate Cable Fire Impact on Passive Autocatalytic Recombiners** **(171)** *G. Nobrega, M. Klauck, E.-A. Reinecke, N. Chaumeix, A. Bentaib, L. Maas*	**Effect of Mach number on the Flame Acceleration and Deflagration-to-Detonation Transition** **(42)** *W. Zhao, J. Liang, X. Cai, R. Deiterding, X. Wang*	**Numerical Investigation of the Global Equivalence Ratio Effects on the Dynamic Behavior of Turbulent Swirling Diffusion Flame** **(240)** *S. Chakchak, T. Boushaki, A. Hidouri, M. Chrigui*	
10:15 10:40		**Simulation of Flame Acceleration and Deflagration-to-Detonation Transition in Components of Chemical Plants** **(24)** *C. Wieland, C. Hirsch, T. Sattelmayer, F. Scharf, V. Hoferichter, H.P. Schildberg*	**DNS of Turbulent Spray Flame Water Droplet Interaction Using an Euler-Lagrange-Lagrange Scheme** **(25)** *J. Hasslberger, R. Concetti, N. Chakraborty, M. Klein*	

10:40 11:05	Break and Work-In-Progress Posters Session III (Hall of 1th floor)			
Topics	**Oblique Detonation** *Chair: **J.Y. Choi***	**RDE VI** *Chair: **K. Ishii***	**Fire Dynamics** *Chair: **Y. Chien***	**Energetic Materials I** *Chair: **S. Jackson***
11:05 11:30	**The Impact of a Micro-Rounded Bump on the Initiation of Oblique Detonation Waves** **(176)** *C. Yan, G. Bakalis, R. El-Chaar, H. Teng, H.D. Ng*	**Experimental Study of Liquid Propellant Rotating Detonation Combustor** **(170)** *S. Ito, K. Ishihara, K. Yoneyama, K. Goto, N. Itouyama, H. Watanabe, A. Kawasaki, K. Matsuoka, J. Kasahara, A. Matsuo, I. Funaki*	**Statistical Research on Firebrand Behaviour in a Simulated 3D Fire Whirl** **(32)** *Y. Zhang, Y. Zhang*	**Pyroelectric Combustion Rate Characterization of Electrically Controlled Solid Propellants** **(193)** *G. Kanagaraj, J.J. Yoh*
11:30 11:55	**Experimental Study of Stabilized Oblique Detonation Waves** **(93)** *D.A. Rosato, M.R. Thornton, K. Ahmed*	**Temperature and Heat-Flux Measurements in a Thin-Wall RDE** **(37)** *C.A. Stevens*	**Experimental Study of Firebrand Lofting Mechanism in a Fire Whirl Induced Flow Field** **(74)** *Y. Zhang, A. Albadi, Y. Zhang*	**Investigation of Micro- and Nano-Catalytic Additive Effects on Ammonium Perchlorate Combustion** **(125)** *F.A. Rodriguez, J.C. Thomas, T. Sammet, D. Teitge, E. Petersen*
11:55 12:20	**Experimental Observation of Non-uniformly Premixed Oblique Detonation** **(189)** *K. Iwata, N. Hanyu, S. Maeda, T. Obara*	**Self-excited Wave Propagation in a Reflective Shuttling Detonation Combustor** **(21)** *M.J. Ullman, S. Prakash, D.R. Jackson, V. Raman C.D. Slabaugh, J.W. Bennewitz*	**Numerical Prediction of Cables Fire Behaviour Using Non-Metallic Components in Cone Calorimeter** **(262)** *A. Alonso Ipina, M. Lazaro, D. Lazaro, D. Alvear*	**Understanding Thermochemical Aspects of the Magnesium Metal Fuel subjected to Hygrothermal Aging with Varied Oxygen Flow Rates** **(195)** *J. Oh, J.J. Yoh*
12:20 12:45	**Formation and Regulation of Unsteady Detonation Mach Stem in A Confined Space** **(20)** *S. Niu, P. Yang, H. Teng*	**Shock-Droplet Interactions and Reaction of Liquid RP-2 Fuel** **(198)** *J.P. Patten, K. Ahmed, R. Hytovick, R.F. Burke*		**Experimental Evaluation of Plain Metal Additives for Solid-Fuel Propulsion Applications** **(123)** *J.C. Thomas, F.A. Rodriguez, E. Petersen*
12:45 14:15	Lunch (Biblioteca Gasparini, 2nd Floor)			

Thursday, June 23rd, 2022 (afternoon sessions)				
	Aula Magna (1st Floor)	Aula C (1st Floor)	Aula D (2nd Floor)	Aula E (2nd Floor)
Topics	**Ignition II** *Chair:* ***C. Strozzi***	**Flame Acceleration & DDT IV** *Chair:* ***J. Melguizo-Gavilanes***	**RDE VII** *Chair:* ***A. Kawasaki***	**Shock Tube I** *Chair:* ***D. Natível***
14:15 14:40	**A Study on Influences of Hydrogen Addition and Turbulence on Ignition Characteristics of Propane Mixtures** **(35)** *M. Nakahara, K. Tanimoto, H. Kudo, F. Abe, K. Tokunaga*	**Effect of Flame Front Thermo-Diffusive Instability on Flame Acceleration in a Tube** **(220)** *J.-J.Hok, O. Dounia, O. Vermorel, T. Jaravel*	**Detonations and Thermoacoustic Modes in a Flow through RDC** **(139)** *E.J. Gutmark, V. Anand, J. Betancourt, A. Gaetano, T. Pritschau, R. Wiggins*	**Shock-tube Study of the Ignition of Fuel-rich CH_4/ or Natural Gas/Ozone/Air Mixtures at High Pressure** **(15)** *J. Herzler, M. Fikri, C. Schulz*
14:40 15:05	**Real Gas Effect on Ignition Characteristics in Ideal and Non-ideal Reactors** **(17)** *Z. Weng, Z. Li, R. Mevel*	**Investigation of Iso-propyl Nitrate as a Detonation Improver** **(184)** *R.A. Mousse, M.A. Burnett, S. Abid, S. de Persis, A. Comandini, M.S. Wooldridge, N. Chaumeix*	**State-to-State Model for Rotating Detonation Combustors** **(243)** *M. Gamba, A. Feleo, J. Shepard, F. Chacon*	**Simultaneous CO and H2O Laser Absorption Measurements of Pentene Isomers in a Shock Tube** **(95)** *C.M. Gregoire, C. Westbrook, O. Mathieu, S.P. Cooper, S. Alturaifi, E. Petersen*
15:05 15:30	**Incompletely Stirred Reactor Network Modeling for the Estimation of Turbulent Non-Premixed Autoignition** **(51)** *S. Iavarone, S. Gkantonas, E. Mastorakos*	**Numerical Study of Multi-dimensional Effects on the Transition to Detonation from Subsonic Self-ignition Waves Propagating at Constant Speed** **(130)** *S. Taileb, E. Rougon, A. Chinnayya, V. Robin*	**Experimental Results for 25-mm and 51-mm RDRE Combustors** **(29)** *C. Knowlen, T. Mundt, M. Kurosaka*	**Probing PAH Formation from Cyclopentene Pyrolysis in a Single-Pulse Shock Tube** **(209)** *L. Carneiro Piton, A. Hamadi, F. Cano, S. Abid, N. Chaumeix, A. Comandini*
15:30 15:55		**The Effect of Buoyancy on Flame Acceleration in Hydrogen-air Mixtures: Experiments in Horizontal and Vertical Tubes** **(194)** *E.V. Bezgodov, S.D. Pasyukov, A.A. Tarakanov, M.V. Nikiforov, Yu.F. Davletchin, V.A. Simonenko, I.A. Kirillov*		**Probing Pyrolytic PAH Chemistry in High-Repetition-rate Shock Tube Coupled to Synchrotron-based Double Imaging Photoelectron/ Photoion Coincidence Spectroscopy** **(233)** *F.E. Cano Ardila, S. Nagaraju, R.S. Tranter, S. Abid, A. Desclaux, A. Rogue, N. Chaumeix, A. Comandini*

15:55 16:20	Break and Work-In-Progress Posters Session III (Hall of 1th floor)			
Topics	**Condensed Phase Detonation II** Chair: ***C. Chiquete***	**Shock Tube II** Chair: ***J. Herzler***	**Numerical Methods** Chair: ***F. Marra***	
16:20 16:45	**Effect of Microstructure on Detonation Performance of the Insensitive High Explosive PBX 9502** **(60)** *S. Voelkel, E.K. Anderson, M. Short, C. Chiquete, S.I. Jackson*	**The Effect of Oxygenated Species on the Fuel-rich Oxidation of CH4 in the Context of Polygeneration: Extinction, CO-Concentration and Temperature Measurements** **(54)** *D. Nativel, J. Herzler, M. Fikri, C. Schulz*	**Reduced Order Modeling of 2-D Reaction-Diffusion System Based on POD-DEIM and k-means Clustering** **(65)** *E.A. Cutillo,G. Petito, K. Bizon, G. Continillo*	
16:45 17:10	**Using a High Speed Hyperspectral Camera to Measure Gas Temperature And Concentration Profiles Resulting From Detonation of TNT** **(266)** *Gagnon, J.-P. (Boubanga-Tombet S.)*	**Ignition of Lubricating Oils using a Novel Spray Injection Technique in a Shock Tube** **(49)** *S.P. Cooper, E. Petersen*	**Numerical Method Based-cellular Automata for Heat Transfer with Application to the Self-Ignition of Energetic Materials** **(135)** *A. Violet, E. El-Tabach, P. Gillard, M. William-Louis*	
17:10 17:35	**Initiation of Sympathetic Detonation between two Separated PETN charges** **(110)** *D. Murray, A. Vashishtha, D. Lenihan, D. Callaghan, C. Nolan*	**Probing PAH Formation from Heptane Pyrolysis in a Single-pulse Shock Tube** **(180)** *A. Hamadi, F. Cano, L. Carneiro Piton, S. Abid, N. Chaumeix, A. Comandini*		
17:35	**Adjourn**			
18:15	**Banquet**			

Work in Progress Posters Session III

(275) Nitromethane Droplet Breakup and Combustion in a Detonation Environment
S. Briggs, N. Berube, D. Dyson, A. Arakelyan, S. Vasu

(277) Investigation of NH3–H2 mixtures in a plug-flow reactor
L. Ruwe, S. Schmitt, D. Zhu, B. Shu, K. Kohse- Höinghaus, A. Lucassen

(289) An Experimental Study of the Formation of CO During Ethanol Pyrolysis and Dry Reforming with CO2
O. Mathieu, C.M. Gregoire, S.P. Coooper, E. Petersen

(292) Spectroscopic CO and H2O Laser Absorption Measurements: Chemical Kinetics Investigation of Toluene Combustion in a Shock-Tube
C.M. Gregoire, S.P. Cooper, E. Petersen

(294) Experimental Investigation of High-Pressure Oxy-Syngas Combustion with High CO2 Dilution
S.P. Cooper, M. Turner, D. Mohr, O. Mathieu, E. Petersen

(278) A mathematical model for autoignition
J. Harris, C. Please, J. Ockendon

(286) A new generation kinetic model for pyrolytic soot formation
T.I. Viola, L. Carneiro Piton, A. Hamadi, N. Chaumeix, A. Comandini

(271) Probing Fuel-rich oxidation of 1,3-Butadiene at high-temperature using quantum-cascade-laser dual-comb spectroscopy
M. Geiser, R. Rahman, F. Arafin, R. Horvath, S. Vasu

(273) Detonation Tube Setup for Liquid Fuel Droplet in Detonation Wave Experiments
N. Berube, S. Briggs, S. Vasu, A. Arakelyan, D. Dyson

Notes

Friday, June 24th, 2022 (morning sessions)				
	Aula Magna (1st Floor)	Aula C (1st Floor)	Aula D (2nd Floor)	Aula E (2nd Floor)
Topics	**Energetic Materials II** *Chair: **J.C. Thomas***	**Detonation Boundary Interaction** *Chair: **G. Ciccarelli***	**RDE VIII** *Chair: **C. Knowlen***	**Multiphase III** *Chair: **A. Matsuo***
9:00 9:25	**Hydrodynamic Characterization of the Aging Induced Performance Degradation of HMX-Based Explosive PBX 9404 (215)** *S.I. Jackson, C. Chiquete, E.K. Anderson*	**Influences of a Small Step on the Side Wall upon Detonation Propagation (66)** *Y. Seki, T. Honda, W. Kim, T. Johzaki, T. Endo*	**Development of an Automatic-Calibrating Small-Scale Thrust Stand for Rotating Detonation Rocket Engines (112)** *A.R. Kotler, R.F. Burke, T. Rezzag, K. Ahmed*	**Experimental Investigation of Reacting Fuel Droplets Interactions with Detonation Waves (250)** *D. Dyson, A. Arakelyan, N. Berube, S. Briggs, J. Ramirez, E. Ninnemann, K. Thurmond, G. Kim, W. Green,*
9:25 9:50	**A Modeling of Metalized Solid Fuel Surface Combustion (196)** *H.S. Choi, S.Y. Han, J.J. Yoh*	**An Immersed-Boundary Projection Method for Studies of Detonation Waves Interacting with Thin Obstacles (98)** *X. Lu, H. Yu, C. Pantano, E. Oran*	**Experimental Study of the Miniaturized Cylindrical Rotating Detonation Engine (201)** *K. Hattori, K. Ota, K. Ishihara, K. Goto, N. Itouyama, H. Watanabe, A. Kawasaki, K. Matsuoka, J. Kasahara, A. Matsuo, I. Funaki*	**Numerical Study of Multi-Dimensional Liquid-Fuel n-Dodecane/Air Detonations with Complex Chemistry (150)** *S.S. Dammati, Y. Kozak, A. Poludnenko*
9:50 10:15	**Laser Ignition of a Low-vulnerability RDX-based Propellant: Influence of the Atmosphere on Ignition and Combustion Properties (55)** *S. Delbarre, L. Courty, P. Gillard*	**Experiments of the Tri-arc Non-Circular Rotating Detonation Engine (RDE) (202)** *J.H. Lee, E.S. Lee, H.S. Han, J.M. Kim, J.-Y. Choi*	**Investigation of Wave Velocity in a Hybrid Rotating Detonation Engine (166)** *M. Assad, O. Penyazkov, I. Chernukho*	**Numerical Analysis on the Breakup of Dilute Water Spray in Gaseous Detonation (165)** *H. Watanabe, A. Matsuo, A. Chinnayya, K. Matsuoka, A. Kawasaki, J. Kasahara*
10:15 10:40	**Characterization of High Pressure Electrolytic Decomposition of Hydroxylammonium Nitrate Aqueous Solution using FTIR (79)** *M.H. Wu, K.I. Lao, Y.T. Chou*		**Wall Heat Flux Measurements behind a Shock Wave Generated by a Detonation (239)** *F. Virot, H. Quintens, B. Boust, J. Sotton, M. Bellenoue*	**Steady and Transient One-dimensional Simulations of Multiphase Dodecane/air Detonations (252)** *N.J. Tricard, A. Ghosh, S.S. Dammati, A. Poludnenko, X. Zhao*

10:40 11:05	**Break**			
Topics	**Propulsion Application** *Chair:* ***G. Ribert***	**RDE IX** *Chair:* ***J. Kasahara***		
11:05 11:30	**Baffled-Tube Ram Accelerator Operation with Methane-Air Propellant** **(45)** *C. Knowlen, B. Leege, J. Correy, C. Smith, A. Higgins*	**Numerical Simulation of the Effect of the Array-hole Injection and Cavity Combustor on the Rotating Detonation Engine Performance** **(88)** *X. He, J. Wang, X. Liu*		
11:30 11:55	**Thermodynamic Analysis of Unsteady Propulsion Systems** **(107)** *R. Fievisohn, C. Stevens*	**Effect of preburn Inhomogeneities on the Detonation Velocity in a Rotating Detonation Rocket Engine** **(148)** *G. Vignat, D. Brouzet, M. Ihme*		
11:55 12:20	**Operation Characteristics of a Disk-Type Rotating Detonation Engine** **(203)** *K. Ishii, K. Ohno, H. Kawana, K. Kawasaki, A.K. Hayashi, N. Tsuboi*	**Study of Fuel-Oxygen Mixing in a Rotating Detonation Engine Cold Analog** **(185)** *M. McLoughlin, S. Gray, G. Ciccarelli*		
12:20	**Adjourn**			
12:30 - **Farewell Party**				


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