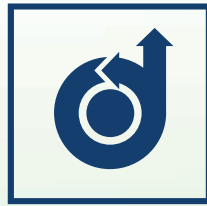


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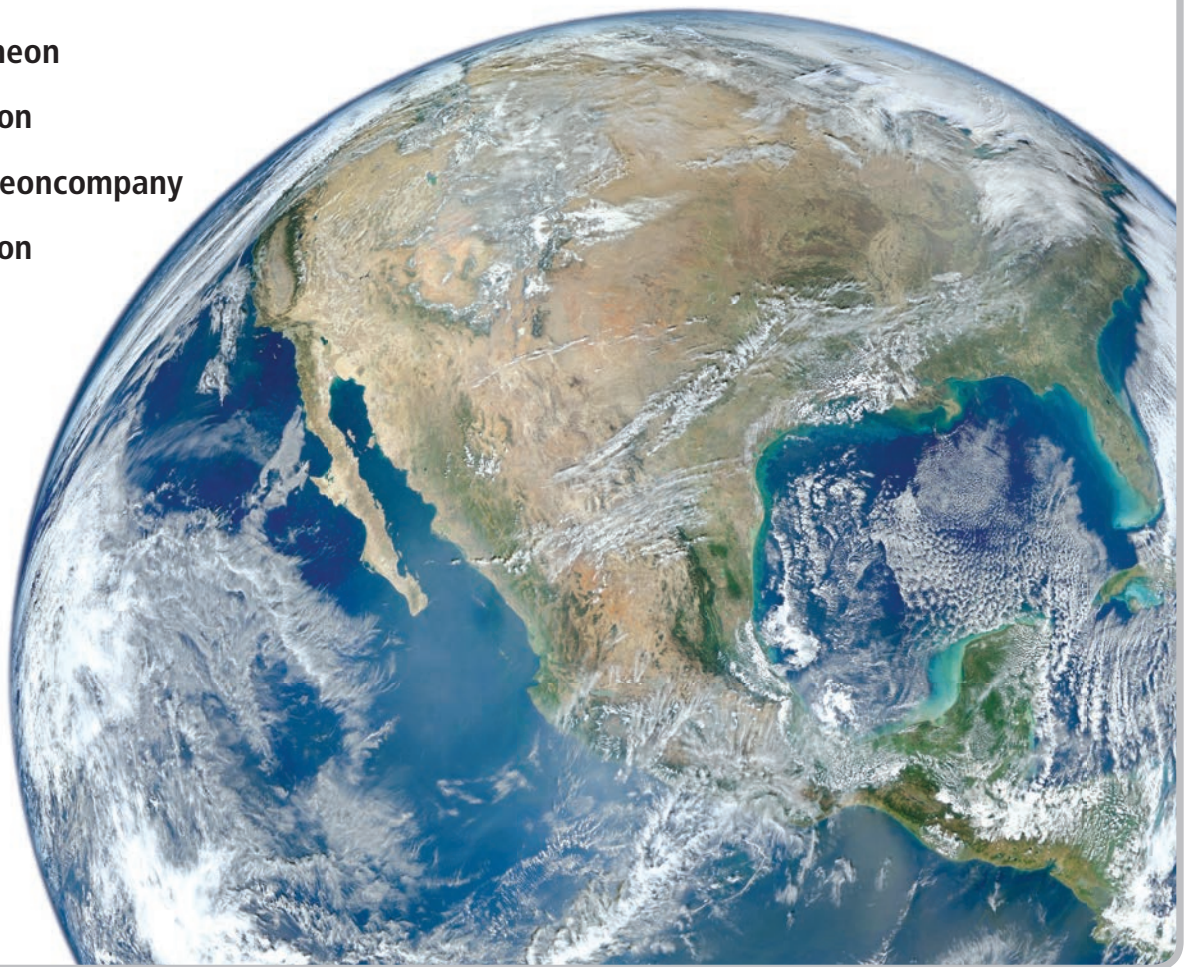
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"Blue Marble" image of Earth captured by Raytheon's Visible Infrared Imaging Radiometer Suite.

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WELCOME TO DEFENSE FORUM

The 2019 AIAA DEFENSE Forum Executive Steering Committee welcomes you to Maryland! We have worked hard this past year curating exciting and thought-provoking content around the forum theme, **EXPANDING DECISIVE AND SUSTAINED ADVANTAGE THROUGH INNOVATION.**

We hope these defense industry leaders, topics, and discussions inspire you.

Make it a great week!

EXECUTIVE STEERING COMMITTEE 2019 AIAA DEFENSE FORUM



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Raytheon Missile
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(*Forum General Chair*)



Laura McGill

Raytheon Missile
Systems
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**Anthony "Tony"
Mitchell**

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Forum Overview

	TUESDAY, 7 MAY	WEDNESDAY, 8 MAY	THURSDAY, 9 MAY	FRIDAY, 10 MAY
0730 hrs	Continental Breakfast	Continental Breakfast	Continental Breakfast	Coffee and Donuts
0800 hrs	Welcome Remarks Plenaries: <i>DoD R&E Technical Priorities: Update on Status and Needs</i>	Plenaries: <i>Warfighter Perspective: Operational Needs and Military Requirements</i> <i>Next-Generation Military Space Capabilities</i>	Plenaries: <i>Key Issues in Hypersonics</i> <i>Counterintelligence Threat Briefing</i>	75 Years of Hypersonics Development: History, Resources, References, and Insights Short Course <i>(Separate registration required)</i>
0830 hrs				
0900 hrs	<i>Missile Defense in the New World Order</i>			
0930 hrs	Networking Coffee Break	Networking Coffee Break	Networking Coffee Break	
1000 hrs	Technical Sessions: <i>WSE-01: Weapon System Effectiveness: Hypersonics Lethality I</i>	Technical Sessions: <i>WSE-03: Weapon System Effectiveness: Hypersonics Lethality III</i>	Technical Sessions: <i>HYP-02: Hypersonic Systems and Technologies II</i> <i>WSE-05: Weapon System Effectiveness: Evaluation of Hypersonic Flow Physics</i>	
1030 hrs				
1100 hrs	<i>TAC-01: Tactical Missiles</i>	<i>SMS-03: Strategic Missiles Systems: Ground Based</i>	<i>ICT-01: Innovative Concepts and Technologies</i>	
1130 hrs	<i>SMS-01: Strategic Missiles I</i> <i>AP-01: Advanced Prototypes I</i>	<i>DEW-01: Directed Energy Weapons I</i>	<i>SYS-01: Computing Systems and Cybersecurity</i>	
1200 hrs	Lunch	Lunch	Lunch	
1230 hrs				
1300 hrs	Technical Sessions: <i>MD-01: Missile Defense I</i>	Technical Sessions: <i>MD-02: Missile Defense II</i> <i>WSE-04: Weapon System Effectiveness: Preflight Computations and Ground Testing</i>	Technical Sessions: <i>HYP-03: Hypersonic Systems and Technologies III</i> <i>WSE-06: Weapon System Effectiveness: Test and Evaluation</i>	
1330 hrs	<i>WSE-02: Weapon System Effectiveness: Hypersonics Lethality II</i>	<i>HYP-01: Hypersonic Systems and Technologies I</i>	<i>SDA-01: System and Decision Analysis for National Security</i>	
1400 hrs	<i>SMS-02: Strategic Missiles II</i>	<i>DEW-02: Directed Energy Weapons II</i>	<i>UAS-01: Robotics and Unmanned Systems</i>	
1430 hrs	<i>AP-02: Advanced Prototypes II</i>			
1500 hrs				
1530 hrs	Networking Coffee Break	Networking Coffee Break	Hypersonics Information Exchange	
1600 hrs				
1630 hrs	Plenary Panel: <i>Maintaining Technological Advantage: The Role of DoD Labs</i>	Plenary Panel: <i>Acquisition and Sustainment at the Speed of Relevance</i>		
1700 hrs				
1730 hrs				
1800 hrs		AEDC Hypervelocity Wind Tunnel No. 9 Tour		
1830 hrs	Awards Recognition and Welcome Reception	<i>(Separate registration required)</i>		
1900 hrs				

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Plenary Sessions

TUESDAY, 7 MAY

0800-0845 HRS

AUDITORIUM

DoD R&E Technical Priorities: Update on Status and Needs

KEYNOTE SPEAKER: Michael Griffin, Under Secretary of Defense for Research and Engineering, Department of Defense

0845-0930 HRS

AUDITORIUM

Missile Defense in the New World Order

KEYNOTE SPEAKER: RADM Jon Hill, USN, Deputy Director, Missile Defense Agency

1000-1030

ROOM 5/6

U.S. Nuclear Modernization and the Sea-Based Strategic Deterrent

FEATURED TECHNICAL PRESENTATION: Thomas Troyano, Director, Strategic Systems and Treaty Compliance, Office of the Secretary of Defense

1600-1730 HRS

AUDITORIUM

Maintaining Technological Advantage: The Role of DoD Labs

MODERATOR: Andrew Gerber, Vice President, Innovation and Strategic Pursuits, Raytheon Integrated Defense Systems

PANELISTS:

Maj Gen William Cooley, USAF, Commander, Air Force Research Laboratory

CAPT Scott Moran, USN, Commanding Officer, U.S. Naval Research Laboratory

Philip Perconti, Director, U.S. Army Research Laboratory

WEDNESDAY, 8 MAY

0800-0845 HRS

AUDITORIUM

Warfighter Perspective: Operational Needs and Military Requirements

KEYNOTE SPEAKER: Col Charles Jones, USAF, Warfighter Requirements Branch Chief, Joint Staff J-8 Joint Integrated Air and Missile Defense Organization (JIAMDO)

0845-0930 HRS

AUDITORIUM

Next-Generation Military Space Capabilities

KEYNOTE SPEAKER: Fred Kennedy, Director, Space Development Agency

1600-1730 HRS

AUDITORIUM

Acquisition and Sustainment at the Speed of Relevance

MODERATOR: Jamie Morin, Executive Director, Center for Space Policy and Strategy, The Aerospace Corporation

Panelists will be announced during the forum.

THURSDAY, 9 MAY

0800-0845 HRS

AUDITORIUM

Key Issues in Hypersonics

KEYNOTE SPEAKER: Michael White, Assistant Director, Hypersonics, Office of the Under Secretary of Defense for Research and Engineering, Department of Defense

0845-0930 HRS

AUDITORIUM

Counterintelligence Threat Briefing

SPEAKERS:

Peter Mitchener, Senior National Intelligence Officer, Cyber, Federal Bureau of Investigation

Liran Goldman, Intelligence Specialist, Naval Criminal Investigative Service

1530-1630 HRS

AUDITORIUM

Hypersonics Information Exchange



General and Security Information

Meeting Site

The forum is being held at the Kossiakoff Center located on the Johns Hopkins University Applied Physics Laboratory campus.

AIAA Registration and Information Center Hours

The AIAA Registration and Information Center will be located in the foyer of the Kossiakoff Center.

Tuesday, 7 May	0700-1830 hrs
Wednesday, 8 May	0700-1800 hrs
Thursday, 9 May	0700-1500 hrs
Friday, 10 May (course only)	0800-0900 hrs

Parking

There is plenty of parking for forum attendees in the Kossiakoff Center parking lot on the lower level.

Employment Opportunities

AIAA members can post and browse resumes, browse job listings, and access other online employment resources by visiting the AIAA Career Center at aiaa.org/careers.

Membership

AIAA is your vital lifelong link to the collective creativity and brainpower of the aerospace profession and a champion for its achievements. aiaa.org/membership

Nondiscriminatory Practices

AIAA accepts registrations irrespective of race, creed, sex, color, physical handicap, and national or ethnic origin.



Attendance at this forum is restricted to U.S. citizens who possess a final SECRET security clearance or higher verified by the Security Office Coordinator.

Security Badge

A security badge with photograph is required for admittance to the forum sessions. Each attendee will be required to produce a driver's license, military I.D., or company photo I.D. prior to receiving a forum badge. Badges must be worn at all times during the forum.

Security Restrictions

Electronic devices or electronic equipment of any kind—including cell phones, radios, personal fitness devices, PDAs, laptops, tablets, cameras, video/audio recording equipment, and two-way pagers and devices—are NOT allowed in the session rooms. One-way pagers must be placed on vibrate during the sessions.

Note-taking is not permitted in or around the forum sessions. Books, magazines, fliers, brochures, and other paper products will not be allowed in the session rooms.

Luggage, briefcases, and other large cases will not be allowed in the forum area. Please leave these items in your car or hotel as storage is not available at the Kossiakoff Center. Small handbags, purses, and personal possessions will be inspected upon entry into the conference area. Security spot checks may be made at any time.



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Recognition and Special Events

2019 Missile Systems Award

Tuesday, 7 May

1800 hrs

AIAA is pleased to announce that G. Satheesh Reddy and Rondell J. Wilson are the co-winners of the 2019 Missile Systems Award. The award recognizes excellence in developing or implementing missile systems technology, including significant technological accomplishments or for inspired leadership of missile systems programs.



Dr. G. Satheesh Reddy, Chairman of the Defence Research and Development Organization, Ministry of Defence, India, was selected for his over three decades of significant national contributions toward indigenous design, development, and deployment of diversified strategic and tactical missile systems, guided weapons, advanced avionics, and navigation technologies in India. Dr. Reddy will receive his award in India.



Rondell J. Wilson, retired Principal Engineering Fellow of Raytheon Missile Systems in Tucson, Arizona, was selected for his exemplary technical leadership and innovation that has significantly advanced the performance and capability of the world's premier missile defense systems. Mr. Rondell will receive his award at the Welcome Reception on Tuesday, 7 May.

AEDC Hypervelocity Wind Tunnel No. 9 Tour

Wednesday, 8 May

1730-1930 hrs

Tour is limited to 40 people and sign up is first come/first served at the registration desk.

All tour attendees will need to use the bus provided, no self-drive option is available.

The Hypervelocity Wind Tunnel No. 9 (Tunnel 9), located at the White Oak, Maryland, site of the Arnold Engineering Development Complex (AEDC), provides aerodynamic simulation critical to hypersonic system development and hypersonic vehicle technologies. The facility continues to support testing for DoD, MDA, DARPA, and NASA programs as well as advanced hypersonic technologies such as boost glide-type vehicles, scramjets, and trans-atmospheric space planes. Tunnel 9 is the DoD's primary high Mach number and high Reynolds number facility for hypersonic ground testing and the validation of computational simulations.

A flyer with more details is available at the registration desk.

75 Years of Hypersonics Development: History, Resources, References, and Insights

Friday, 10 May

0800-1700 hrs

There is a rich history of 75 years of hypersonics development. This course is designed to touch on many of the key developments in the past and provide references and resources to learn more about this history. "Those that do not learn from the past are destined to repeat it."

For full description, visit: defense.aiaa.org/DefenseCourse

Registration Fees:

AIAA Member and Government Employee Onsite - \$399

Nonmember - \$499



Program

Tuesday			
Tuesday, 7 May 2019			
1-PLNRY-1 0800 - 0845 hrs	DoD R&E Technical Priorities: Update on Status and Needs		Auditorium
Michael Griffin Under Secretary of Defense for Research and Engineering Department of Defense			
Tuesday, 7 May 2019			
2-PLNRY-2 0845 - 0930 hrs	Missile Defense in the New World Order		Auditorium
RADM Jon Hill, USN Deputy Director Missile Defense Agency			
Tuesday, 7 May 2019			
3-AP-1	Advanced Prototypes I		Room 7/8
Chaired by: R. FONTAINE, MIT Lincoln Laboratory and A. NORLOFF, MIT Lincoln Laboratory			
1000 hrs AIAA-DE19-9000 PACECR: Prototype Aerial Contested Environment Communications Relay C. O'Keefe, T. Gibbons, R. Amin, C. Jackson, C. Timmerman, Lincoln Laboratory, Massachusetts Institute of Technology, Lexington, MA	1030 hrs AIAA-DE19-9001 Design and Development of a Protected Satellite Communications Payload in Support of the PACECR Program C. O'Keefe, E. Tollefson, R. Standley, D. Rilling, M. Moriarty, Lincoln Laboratory, Massachusetts Institute of Technology, Lexington, MA; et al.	1100 hrs AIAA-DE19-9003 Optimizing the Survivability, Lethality, Accuracy, and Penetration of a Warhead for Maximum Effect Against a Prioritized Target Set P. Marquardt, D. Fajardo, D. Malechuk, J. Bruno, A. Oliphant, ARA, Albuquerque, NM	
Tuesday, 7 May 2019			
4-SMS-1	Strategic Missiles I		Room 5/6
Chaired by: S. VAN DYK, Navy Strategic Systems Programs and C. CUPIPES, Lockheed Martin Space and A. EDSALL, Draper Laboratory			
1000 hrs AIAA-DE19-9097 U.S. Nuclear Modernization and the Sea-based Strategic Deterrent T. Tsvetkov, OUSD(A&S)/A-18/PM, Washington, D.C.	1030 hrs AIAA-DE19-9004 Assessing D5LE2 Requirements with Regard to the 2018 Nuclear Posture Review A. Weaver, K. Labbe, Systems, Planning and Analysis, Inc, Alexandria, VA	1100 hrs AIAA-DE19-9006 Case Study in Avionics Development using Model Based Engineering M. Long, D. Galea, Lockheed Martin Corporation, Sunnyvale, CA	1130 hrs AIAA-DE19-9005 Experience Applying an Agile Development Approach to an Electronics Project T. Tran, D. Kenyon, Lockheed Martin Corporation, Sunnyvale, CA
Tuesday, 7 May 2019			
5-TAC-1	Tactical Missiles		Room 3/4
Chaired by: M. FRIEDLANDER, Aerojet Rocketdyne and R. GAMBLE, QuantTech Corporation			
1000 hrs AIAA-DE19-9009 Aerojet Rocketdyne Clean Air Subscale Ramjet Test Facility (SuRF) S. Dixon, Aerojet Rocketdyne, Huntsville, AL	1030 hrs AIAA-DE19-9010 Ageless Propellant E. Dimas, S. Dawley, Aerojet Rocketdyne, Culpeper, VA	1100 hrs AIAA-DE19-9011 Development of Additive Manufactured (AM) Propellant J. Sabourin, N. Brown, S. Dawley, Aerojet Rocketdyne, Culpeper, VA	
Tuesday, 7 May 2019			
6-WSE-1	Weapon System Effectiveness - Hypersonics Lethality I		Auditorium
Chaired by: J. LAFLEUR, Sandia National Laboratories and R. ADDIS, Lawrence Livermore National Laboratory			
1000 hrs AIAA-DE19-9012 Kinetic Energy Projectiles Warheads -- Using Speed to Full Effect M. King, Lawrence Livermore National Laboratory, Livermore, CA	1030 hrs AIAA-DE19-9013 An Overview of the KEP Design and Development Process N. Volkoff-Shoemaker, Lawrence Livermore National Laboratory, Livermore, CA	1100 hrs AIAA-DE19-9014 Using Lethality as a Bottoms up Approach for Optimized Warhead Design J. Elder, MTSI, Huntsville, AL	1130 hrs AIAA-DE19-9015 KEP Requirements Developing Warhead Design Requirements from Target M. King, Lawrence Livermore National Laboratory, Livermore, CA

Tuesday, 7 May 2019		Advanced Prototypes II		Room 7/8	
7-AP-2		Chaired by: R. FONTAINE, MIT Lincoln Laboratory and A. NORLOFF, MIT Lincoln Laboratory			
1330 hrs AIAA-DE19-9017	1330 hrs AIAA-DE19-9018	Low-SWaP Thermal Management Enabled by Additive Manufacturing E. Browne, Lincoln Laboratory, Massachusetts Institute of Technology, Lexington, MA			
Advanced Thermal Management for Airborne Prototype Systems W. Flaherty, R. Fontaine, Lincoln Laboratory, Massachusetts Institute of Technology, Lexington, MA					
Tuesday, 7 May 2019		Missile Defense I		Auditorium	
8-MD-1		Chaired by: R. GAMBLE, QuantTech Corporation and D. FOX, Orbital ATK			
1330 hrs AIAA-DE19-9019	1330 hrs AIAA-DE19-9020	1400 hrs AIAA-DE19-9021	1430 hrs AIAA-DE19-9022	1500 hrs AIAA-DE19-9023	
BMD Radar Observations Against Targets of Opportunity L. Maciel, Lincoln Laboratory, Massachusetts Institute of Technology, Lexington, MA	Unidentified Object (UO) RCS Data Analysis D. Koltenuk, Lincoln Laboratory, Massachusetts Institute of Technology, Lexington, MA	Detection and Tracking of HGV Targets Using Space-Based IR Sensors S. Hsu, H. Burke, M. McLaughlin, D. Youmans, J. Orazo, S. Prutzer, Lincoln Laboratory, Massachusetts Institute of Technology, Lexington, MA	Analysis in Hypersonic Missile Intercept Lethality and Debris Fall J. Rejcek, Lockheed Martin Corporation, Dallas, TX	Multi-Fidelity CoKriging Analysis of the Aerothermodynamics of a Threat Ballistic Missile C. Shuff, S. Carpenter, C. Ditter, NASIC, Dayton, OH	
Tuesday, 7 May 2019		Strategic Missiles II		Room 5/6	
9-SMS-2		Chaired by: S. VAN DYK, Navy Strategic Systems Programs and C. CUPPLES, Lockheed Martin Space and A. EDSALL, Draper Laboratory			
1330 hrs AIAA-DE19-9024	1330 hrs AIAA-DE19-9025	1400 hrs AIAA-DE19-9088	1430 hrs AIAA-DE19-9089	1500 hrs AIAA-DE19-9095	
A concept for the application of the Design for X methodology to Strategic Systems H. Stevens, Lockheed Martin Corporation, Sunnyvale, CA; S. Senzer, Lockheed Martin Corporation, Denver, CO; P. Rohrbach, R. Mandel, Lockheed Martin Corporation, Sunnyvale, CA	A Weapon System Cyber Kill Chain Framework T. Berrean, J. Stratton, Lockheed Martin Corporation, Cape Canaveral, FL	Cyber + Model Based Engineering Project N. Brock, Charles Stark Draper Laboratory, Cambridge, MA; S. Singer-Barnard, Johns Hopkins University Applied Physics Laboratory, Laurel, MD	3D Data Visualization D. Garber, J. Garretson, J. Dean, M. Gailey, L. Skeritt, J. Jorgensen, Johns Hopkins University Applied Physics Laboratory, Laurel, MD	The Rapid Development of Mission Expansion Capability: Standard Missile 6 K. Gautreau, Raytheon Company, Tucson, AZ	
Tuesday, 7 May 2019		Weapon System Effectiveness - Hypersonics Lethality II		Room 3/4	
10-WSE-2		Chaired by: A. CASH, People Tec and J. LAFLEUR, Sandia National Laboratories			
1330 hrs AIAA-DE19-9027	1330 hrs AIAA-DE19-9028	1400 hrs AIAA-DE19-9029	1430 hrs AIAA-DE19-9030		
KEP Design through Hydrodynamics – The Art of the Possible C. Arthur, Lawrence Livermore National Laboratory, Livermore, CA	Weaponization – From Hydrocodes to Mechanical Design M. Scott, Lawrence Livermore National Laboratory, Livermore, CA	Pre-Test Validation – Making Sure the Warhead can Fly and Function M. Scott, Lawrence Livermore National Laboratory, Livermore, CA	Recently Conducted Controlled Impact Testing C. Arthur, Lawrence Livermore National Laboratory, Livermore, CA		
Tuesday, 7 May 2019		Maintaining Technological Advantage: The Role of DoD Labs		Auditorium	
11-PLNRY-3		Moderator: Andrew Gerber, Vice President, Innovation and Strategic Pursuits, Raytheon Integrated Defense Systems			
1600 - 1730 hrs					
Panelists:					
Maj Gen William Cooley, USAF Commander Air Force Research Laboratory		CAPT Scott Moran, USN Commanding Officer U.S. Naval Research Laboratory		Philip Perconti Director U.S. Army Research Laboratory	

Wednesday			
Wednesday, 8 May 2019			
12-PLNRY-4 0800 - 0845 hrs	Warfighter Perspective: Operational Needs and Military Requirements		Auditorium
Col Charles Jones, USAF Warfighter Requirements Branch Chief Joint Staff J-8 Joint Integrated Air and Missile Defense Organization (JIAMDO)			
Wednesday, 8 May 2019			
13-PLNRY-5 0845 - 0930 hrs	Next-Generation Military Space Capabilities		Auditorium
Fred Kennedy Director Space Development Agency			
Wednesday, 8 May 2019			
14-DEW-1	Directed Energy Weapons		Room 7/8
Chaired by: M. NEICE			
1000 hrs AIAA-DE19-9087 Coherently Combined Fiber Laser Technology D. Martz, A. Libson, Lincoln Laboratory, Massachusetts Institute of Technology, Lexington, MA	1030 hrs AIAA-DE19-9096 Directed Energy Systems Integration Committee Report D. Miller, Lockheed Martin Corporation, Fort Worth, TX; D. Wittich, Air Force Research Laboratory, Albuquerque, NM		
Wednesday, 8 May 2019			
15-SMS-3	Strategic Missile Systems - Ground Based		Room 5/6
Chaired by: M. OLMOS, Northrop Grumman Corporation and K. ANDERSON, USAF AFNWC/NWIBD			
1000 hrs AIAA-DE19-9034 Multi-Input RV Reentry Vibration Simulation Test D. Hill, E. Leung, B. Bittinger, Lockheed Martin Corporation, King of Prussia, PA	1030 hrs AIAA-DE19-9035 Coupled CFD-DSMC Simulation of Jet Interaction at Very High Exoatmospheric Altitudes M. Lively, S. Ramakrishnan, Northrop Grumman Corporation, San Bernardino, CA	1100 hrs AIAA-DE19-9036 Prediction of the Effect of Plasma on Communication Using Real Gas CFD Simulation with Finite Rate Chemistry M. Young, S. Ramakrishnan, Northrop Grumman Corporation, San Bernardino, CA	1130 hrs AIAA-DE19-9094 Systems Engineering Transformation - Migrating the Strategic Systems Program (SSP) Safety Program to a Model-Based Environment G. Rosenthal, J. Cecarelli, Lockheed Martin Corporation, Denver, CO; E. Loosaracion, Strategic Systems Programs, Washington, D.C.
Wednesday, 8 May 2019			
16-WSE-3	Weapon System Effectiveness - Hypersonics Lethality III		Auditorium
Chaired by: A. CASH, People Tec and R. ADDIS, Lawrence Livermore National Laboratory			
1000 hrs AIAA-DE19-9037 Constructing Test Apparatus Designed to Gather Critical Empirical Data for Lethality M&S Validation Elder MTSI Huntsville AL	1030 hrs AIAA-DE19-9038 BALAGAN – A Fast Running Endgame Lethality Assessment Code for KEP and Blast/Frag Warheads T Yern MTSI Huntsville AL	1100 hrs AIAA-DE19-9039 Ground and Flight Test Reconstruction using BALAGAN G. Ferguson MTSI Huntsville AL	1130 hrs AIAA-DE19-9040 Accreditation of BALAGAN for Weaponizing and Mission Planning J Agnew MTSI Huntsville AL

Wednesday, 8 May 2019			Hypersonic Systems & Technologies I		Room 5/6
Chaired by: A. KOTAPALLI, Lockheed Martin Corporation and J. MCINTIRE, MIT Lincoln Laboratory					
1300 hrs AIAA-DE19-9042 Additively Manufactured Small Subscale Hypersonic Flight Vehicle Tests in Two-Stage Light Gas Gun System J. Walker, N. Mueschke, D. Gosch, S. Chocron, T. Moore, N. Scott, Southwest Research Institute, San Antonio, TX	1330 hrs AIAA-DE19-9043 Development of a Hypersonic Quiet Tunnel at Mach 8 B. Chynoweth, S. Schneider, Purdue University, West Lafayette, IN	1400 hrs AIAA-DE19-9044 Closing the Modeling Loop: Using Flight Test Data to Improve Hypersonic Boundary Layer Transition Predictions O. Elliott, R. Greendyke, J. Komives, Air Force Institute of Technology, Wright-Patterson AFB, OH	1430 hrs AIAA-DE19-9045 Direct Numerical Simulation of Roughness Induced Hypersonic Boundary Layer Transition on a Seven-Degree Half-Angle Cone T. Crouch, J. Komives, Air Force Institute of Technology, Wright-Patterson AFB, OH	1500 hrs AIAA-DE19-9046 Relevance for Transition Modeling in the CPS Mission R. Wagnild, N. Bitter, Sandia National Laboratories, Albuquerque, NM; H. Bares, Integrated Innovation, Inc., Huntsville, AL; J. Lafferty, AEDC White Oak, Silver Spring, MD	
Wednesday, 8 May 2019					
18-MD-2		Missile Defense II			Auditorium
Chaired by: R. GAMBLE, QuantifTech Corporation and D. FOX, Orbital ATK					
1300 hrs AIAA-DE19-9047 Demonstration of the Solar/Lunar Exclusion Test Capability in the AEDC 7V Chamber Using an MDA EKV Interceptor System H. Lowry, S. Steely, National Aerospace Solutions, Arnold AFB, TN; R. Nicholson, K. Mead, QuantifTech, Arnold AFB, TN	1330 hrs AIAA-DE19-9048 (U) Cognitive Processing Techniques in Support of Ballistic Missile Defense Automated Threat Characterization for Discrimination and weapon assignment S. Hartley, Modern Technology Solutions Inc, Alexandria, VA	1400 hrs AIAA-DE19-9050 Machine Learning Techniques for Identifying Interactions in Missile Defense Architectures A. Raz, L. Mockus, K. Ezra, D. DeLaurentis, Purdue University, West Lafayette, IN	1430 hrs AIAA-DE19-9051 Impact of Aerosol Particles on a Thermal Protection System for a Hypersonic Glide Vehicle K. Eichenberg, R. Greendyke, Air Force Institute of Technology, Wright-Patterson AFB, OH		
Wednesday, 8 May 2019					
19-WSE-4		Weapon System Effectiveness - Preflight Computations and Ground Testing			Room 3/4
Chaired by: T. WADHAMS, CUBRC and S. BLAKELY, Air Force Global Strike Command					
1300 hrs AIAA-DE19-9052 Model Integration and Infrastructure R. Wiseman, NSWC Crane, Crane, IN	1330 hrs AIAA-DE19-9053 Advances in Aerothermodynamic Modeling and Simulation at Sandia National Laboratories M. Howard, D. Dinzl, R. Keedy, J. Murray, J. Roy, M. Barone, Sandia National Laboratories, Albuquerque, NM	1400 hrs AIAA-DE19-9054 Review of Experimental Programs in the LENS I and II Hypervelocity Ground Test Facility to Measure the Aero-thermal, Aero-Optical and Radiation Performance of Hypersonic Interceptor Seeker Designs R. Parker, M. Holden, T. Wadhams, CUBRC, Buffalo, NY	1430 hrs AIAA-DE19-9055 Experimental Programs in the LENS I and IIS Clean Air Hypervelocity Ground Test Facility between 4000 ft/sec and 14,000 ft/sec to Measure the Aero-thermal, Aero-Optical and Radiation Performance Hypersonic Weapons M. Holden, T. Wadhams, M. MacLean, A. Dufrene, Z. Carr, R. Parker, CUBRC, Buffalo, NY	1500 hrs AIAA-DE19-9056 Validation of High Speed Impact into Concrete with Finite Element Erosion Coupling to Smooth Particle Hydrodynamics A. Worley, Johns Hopkins University Applied Physics Laboratory, Laurel, MD	
Wednesday, 8 May 2019					
20-PLNRY-6		Acquisition and Sustainment at the Speed of Relevance			Auditorium
1600 - 1730 hrs Moderator: Jamie Morin, Executive Director, Center for Space Policy and Strategy, The Aerospace Corporation Panelists will be announced during the forum.					
Thursday					
Thursday, 9 May 2019					
21-PLNRY-7		Key Issues in Hypersonics			Auditorium
0800 - 0845 hrs Michael White Assistant Director, Hypersonics Office of the Under Secretary of Defense for Research and Engineering Department of Defense					

Thursday, 9 May 2019		Counterintelligence Threat Briefing		Liran Goldman Intelligence Specialist Naval Criminal Investigative Service	Auditorium
22-PLNRY-8 0845 - 0930 hrs					
Speakers: Peter Mirchener Senior National Intelligence Officer, Cyber Federal Bureau of Investigation					
Thursday, 9 May 2019					
23-CPS-1		Computing Systems and Cyber Security			Room 7/8
Chaired by: R. PEDERSEN, Lockheed Martin Mission Systems & Training and R. TUGGLE, PeopleTec					
1000 hrs AIAA-DE19-9058 Creating an Embedded Systems Security Framework J. Struik, Cyber Strike Solutions, LLC, Williamsburg, IA	1030 hrs AIAA-DE19-9091 Study of Cyber Effects through use of a Closed-Loop Systems Simulation S. Boneau, A. Sharma, Charles Stark Draper Laboratory, Cambridge, MA				
Thursday, 9 May 2019					
24-HYP-2		Hypersonic Systems & Technologies II			Auditorium
Chaired by: A. KOTAPALLI, Lockheed Martin Corporation and J. MCINTIRE, MIT Lincoln Laboratory					
1000 hrs AIAA-DE19-9060 First Principles, High Fidelity Modeling Tools for Predicting OPIR Signature of Hypersonic Glide Vehicles (HGV) N. Sinha, CRAFT Tech, Pipersville, PA	1030 hrs AIAA-DE19-9061 Recent Development and Application of Advanced Software Tools for Hypersonic Flowfields and Signatures T. Deschenes, B. Smith, J. Grot, J. Cline, Spectral Sciences, Inc., Burlington, MA	1100 hrs AIAA-DE19-9062 Aerodynamic Heating Coupled with Structural Temperature Response Analysis for Hypersonic Flight Vehicles F. Rafia, Air Force Research Laboratory, Edwards, CA	1130 hrs AIAA-DE19-9063 Initial Operation of the Mach 18 Capability at the AEDC Hypervelocity Wind Tunnel No. 9 J. Lafferty, AEDC White Oak, Silver Spring, MD		
Thursday, 9 May 2019					
25-ICI-1		Innovative Concepts and Technologies			Room 5/6
Chaired by: A. NORLOFF, MIT Lincoln Laboratory and R. FONTAINE, MIT Lincoln Laboratory					
1000 hrs AIAA-DE19-9064 Features Based Multimission Multitarget Association and Enumeration A. Sharp, U.S. Army, Armaments Research, Development and Engineering Center, Picatinny Arsenal, NJ	1030 hrs AIAA-DE19-9065 Advanced Sounding Rocket Applications B. Wieberg, Sandia National Laboratories, Albuquerque, NM	1100 hrs AIAA-DE19-9066 Transceiver Chain Restructuring M. Boggs, L3 Technologies, San Diego, CA	1130 hrs AIAA-DE19-9067 Use of AI and data analytics to assist in solving sensor/weapon placement problem for missile defense L. Mockus, K. Ezra, A. Raz, D. Delaurentis, Purdue University, West Lafayette, IN		
Thursday, 9 May 2019					
26-WSE-5		Weapon System Effectiveness - Evaluation of Hypersonic Flow Physics			Room 3/4
Chaired by: O. YAKABOSKI, USAF AFMC and S. BLANEY, Air Force Global Strike Command					
1000 hrs AIAA-DE19-9068 Evaluation of Boundary Layer Transition on a Large 7-degree Cone at Mach 10 over a Range of Velocities and Reynolds Numbers T. Wadhams, R. Parker, M. MacLean, M. Holden, CUBRC, Buffalo, NY	1030 hrs AIAA-DE19-9069 Focused Laser Differential Interferometry (FLDI) Measurements of the Free Stream and Boundary Layer R. Parker, T. Wadhams, M. MacLean, CUBRC, Buffalo, NY	1100 hrs AIAA-DE19-9070 Boundary Layer Stability Calculations and Experimental Analysis of Sharp and Blunted Cones at Mach 10 B. Wheaton, Johns Hopkins University Applied Physics Laboratory, Laurel, MD; G. McKiernan, Purdue University, West Lafayette, IN; D. Araya, D. Berridge, Johns Hopkins University Applied Physics Laboratory, Laurel, MD	1130 hrs AIAA-DE19-9071 Demonstration of Six-Component Force and Moment Measurements in LENS IIS on a Full-Scale Hypersonic Vehicle Z. Carr, M. Holden, A. Dufrene, M. MacLean, T. Wadhams, CUBRC, Buffalo, NY		

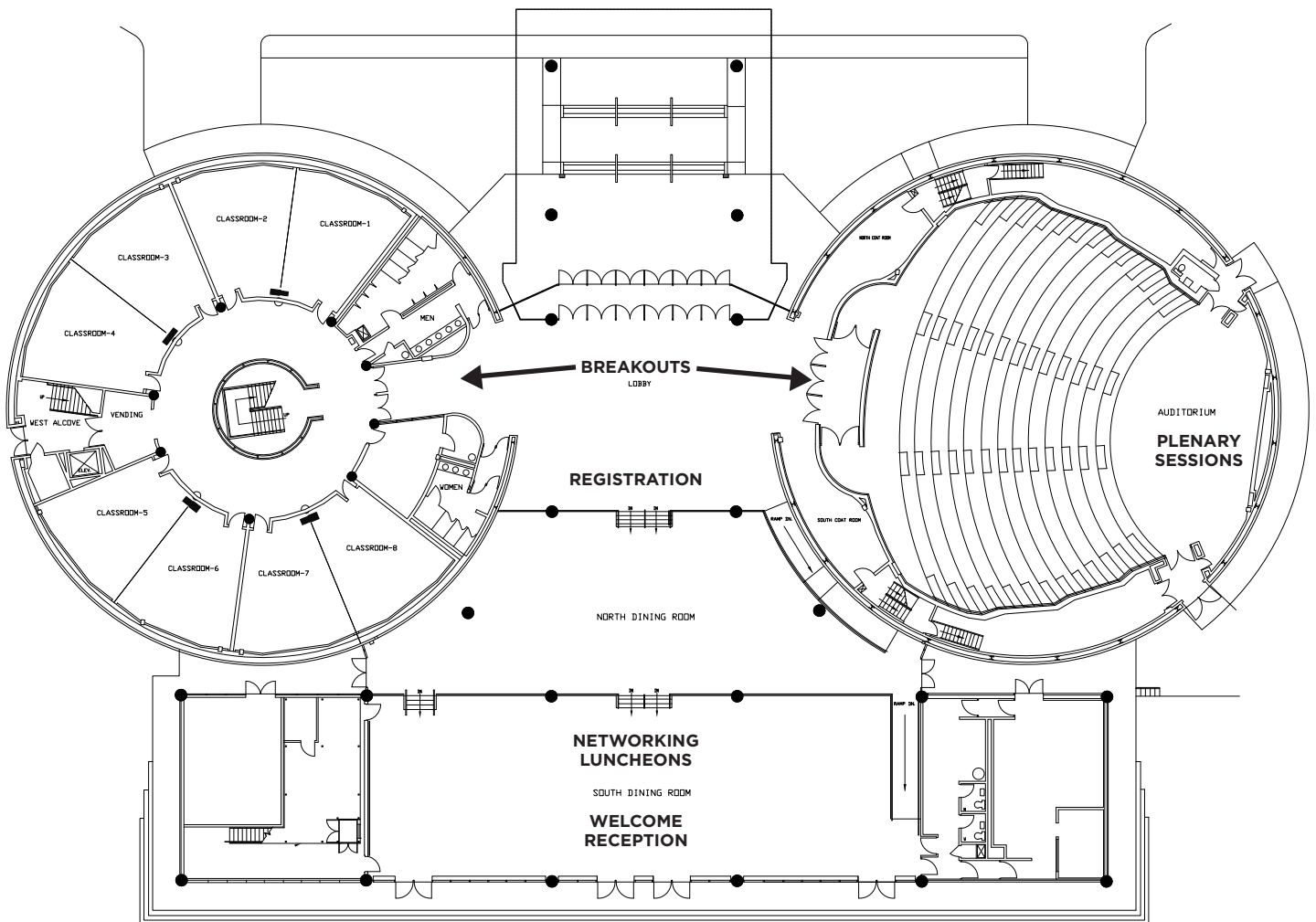
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27-HYP-3		Hypersonic Systems & Technologies III (Invited)	
Chaired by: J. SORDYL, Williams International and A. KOTTAPALLI, Lockheed Martin Corporation			
1300 hrs AIAA-DE19-9072 Versatile Affordable Advanced Turbine Engines (VAATE) / Advanced Turbine Technology for Affordable Mission-capability (ATTAM) program overview C. Cross, Air Force Research Laboratory, Oakwood, OH	1330 hrs AIAA-DE19-9073 Supersonic Turbine Engine for Long Range (STELR) program and results S. Ballie, Air Force Research Laboratory, Wright-Patterson AFB, OH	1400 hrs AIAA-DE19-9074 High speed turbine-powered weapons system studies K. Numbers, Air Force Research Laboratory, Wright-Patterson AFB, OH	1430 hrs AIAA-DE19-9075 Recent advances in Pressure Gain Combustion (PGC) technology R. Simmons, Air Force Research Laboratory, Wright-Patterson AFB, OH
1500 hrs AIAA-DE19-9076 Recent advances in Turbine Based Combined Cycles G. Bruening, Air Force Research Laboratory, Wright-Patterson AFB, OH			
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28-UAS-1		Robotics & Unmanned Systems	
Chaired by: M. MCFARLAND, Raytheon			
1300 hrs AIAA-DE19-9092 AI on the Edge: Placing AI in the Hands of Today's Warfighter B. Losey, Shield AI, San Diego, CA	1330 hrs AIAA-DE19-9093 Characterizing the Threat of Small Unmanned Aircraft A. Lacher, MITRE Corporation, McLean, VA	1400 hrs AIAA-DE19-9079 Radiolocation Airborne Detect & Defeat (RADDD) M. Boggs, L3 Technologies, San Diego, CA	1430 hrs AIAA-DE19-9081 RGBD Visual Odometry with Covariance for UAV Navigation M. Anderson, R. Boone, U.S. Air Force Academy, Colorado Springs, CO; K. Bink, Air Force Research Laboratory, Eglin AFB, FL
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29-SDA-1		System and Decision Analysis for National Security	
Chaired by: B. STEINFELD, Sandia National Labs and J. LAFLAUR, Sandia National Laboratories			
1300 hrs AIAA-DE19-9077 The Development of Visualized Risk-Informed Tradespace Exploration (vRITE) for Research and Development Decision-Making S. Mahle, B. McCaragher, Charles Stark Draper Laboratory, Cambridge, MA	1330 hrs AIAA-DE19-9078 Robust, Adaptive, Integrated, Deployable Solutions M. Pang, E. Fleming, Sandia National Laboratories, Albuquerque, NM		
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30-WSE-6		Weapon System Effectiveness - Test and Evaluation	
Chaired by: T. WADHAMIS, CUBRC and O. YAKABOSKI, USAF AFMC			
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1500 hrs AIAA-DE19-9086 NW Surveillance - System Tester Development P. Smolenski, Sandia National Laboratories, Albuquerque, NM			
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31-PLNRY-9		Hypersonics Information Exchange	
1530 - 1630 hrs Facilitated Audience Discussion			

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