All Times CDT	Wednesday May 25, 2022	
7:30 am - 8:30 am	*Buffet (Hot) Breakfast* *Century III, 1st Fl.*	
8:30 am - 9:00 am	**Welcome** **Scott Doebling, VVUQ Symposium Chair** **Michelle Pagano, ASME VVUQ Staff Engineer** *Century IV, 1st Fl.*	
9:00 am - 10:00 am	**Keynote Speaker:** **Simone Youngblood, Principal Professional Staff, Johns Hopkins Applied Physic Laboratory** **Topic: Emerging Concepts in Rigorous Simulation Validation**	
10:00 am - 10:15 am	*Break*	
	Track 1 **Reveille, 2nd Fl.**	**Track 2** **Hullabaloo, 2nd Fl.**
	Session Chair: Luis Eca, IST	**Session Chair: Brandom Wilson, Los Alamos National Lab**
Session 1 **10:15 am - 12:20 pm**	**04-01 Verification Methods**	**07-01 VVUQ for Fluid Dynamics and Heat Transfer**
1	VVS2022-88173 Code Verification Implications for Algebraic Equations Presenting Author: Aaron Krueger	VVS2022-88224 A Cfd Validation Challenge for Transonic, Shock-Induced Separated Flow Presenting Author: Blake Lance
2	VVS2022-87460 Code-Verification Techniques for the Method-of-Moments Implementation of the Electric-Field Integral Equation Presenting Author: Brian Freno	VVS2022-88380 Assessment of Different Rans Turbulence Models in the Thermal Performance of Mini-Channels for the Cooling of Mw-Class Gyrotron Resonator Presenting Author: Laura Savoldi
3	VVS2022-87461 Nonintrusive Manufactured Solutions for Non-Decomposing Ablation in Two Dimensions Presenting Author: Brian Freno	VVS2022-86806 Validation Analysis of Medium-Scale Methanol Pool Fire Presenting Author: Jared Kirsch **Technical Publication**
4	VVS2022-88410 Error Estimation for Coarse Resolution Simulations Presenting Author: Noah E. Van Dam	VVS2022-88372 A Validation Study of Hypersonic Aerodynamics With Multiple Physics-Fidelity Models Presenting Author: Blake Lance
5		VVS2022-86822 Verification Assessment of Thermal Models in Conjugate Heat Transfer Analysis of Small-scale Heat Sinks Presenting Author: Mahyar Pourghasemi **Technical Pubication**
12:20 pm - 1:00 pm	*Lunch* *Century III, 1st Fl.*	
	Session Chair: Marc Horner, Ansys **Track 1** **Reveille, 2nd Fl.**	**Session Chair: Aaron Koskelo, Los Alamos National Lab** **Track 2** **Hullabaloo, 2nd Fl.**
Session 2 **1:00 pm - 2:15 pm**	**10-01 VVUQ for Biomedical Engineering**	**05-01 Validation Methods**
1	VVS2022-89920 An End-to-End Example of the Asme Vvuq-40 Standard: Enabling Fea in the Review of Spinal Implants Presenting Author: Marc Horner	VVS2022-86809 On the Application of the Area Metric to Validation Exercises of Stochastic Simulations Presenting Author: Luis Eca **Technical Publication**
2	VVS2022-88394 Sensitivity of Derived Quantities Due to Different Pre & Post Processing Techniques for Internal Fluid Flows: Case Studies Using the Fda Benchmark Nozzle Model Geometry and Flow Conditions Presenting Author: Chris Basciano	VVS2022-88290 Validation of Multivariate Model Outputs With Sparse Measurements Presenting Author: Andrew White
3	VVS2022-88496 Credibility Assessment of Patient-Specific Computational Modeling Using Patient-Specific Cardiac Modeling as an Exemplar Presenting Author:Prasanna Pathmanathan	VVS2022-88620 Uncertainty in Input Conditions and Model Form Errors Using Probability Bounds Analysis Presenting Author: Brandon Wilson
2:15 pm - 2:30 pm	*Break*	
2:30 pm - 3:05 pm	VVUQ for Biomedical Engineering (10-01) Featured Speaker: Michael Sacks, Director, Oden Institute James T. Willerson Center for Cardiovascular Modeling and Simulation The University of Texas at Austin Topic: Parameter Estimation and Computational Model Validation for Soft Tissue Organs Century IV, 1st Fl.	
	Session Chair: Brian Freno, Sandia National Laboratories **Track 1** **Reveille, 2nd Fl.**	**Session Chair: Yassin Hassan, Texas A&M University** **Track 2** **Hullabaloo, 2nd Fl.**
Session 3 **3:20 pm - 4:35 pm**	**12-01 VVUQ for Advanced Manufacturing** **14-01 VVUQ for Computational Electromagnetics, Plasma, Radiation**	**VVUQ 30 Benchmark Challenge Problem** Introduction
	12-01 VVUQ for Advanced Manufacturing VVS2022-88203 Anomaly Detection for Industrial Automation and Quality Assurance Presenting Author:Anthony Garland	VVS2022-97990 High Resolution Measurements of a Heated Jet in Upper Plenum: Benchmark Challenge Problem Presenting Author: Blake Maher
	14-01 VVUQ for Computational Electromagnetics, Plasma, Radiation VVS2022-88310 Planar Laser Physics Verification With Xrage Author: Steven E. Anderson	VVS2022-97986 NekRS simulations of the flow in the upper plenum of a High Temperature Gas Reactor Experiment Presenting Author Elia Merzari
		VVS2022-97934 High Temperature Test Facility Benchmark Experiments for Dcc and Pcc Analysis Presenting Author: Tommy Moore
5:00 pm - 6:00 pm	**Reception** **Century Ballroom** **Pre function space, 1st. Fl.**	
	End of Day 1	
All Times CDT	**Thursday May 26, 2022**	
7:30 am - 8:30 am	*Buffet (Hot) Breakfast* *Century III, 1st Fl.*	

8:30 am - 9:00 am		**Scott Doebling, VVUQ Symposium Chair** **Michelle Pagano, ASME VVUQ Staff Engineer** **Century IV, 1st Fl.**
9:00 am - 10:00 am		**Keynote Speaker:** **David Diaz, Chief Architect, Department of the Air Force Digital Transformation Office** **Topic : Moving Out of the 90s with Digital Technologies**
10:00 am - 10:15 am		*Break*

	Track 1 **Reveille, 2nd Fl.**	**Track 2** **Hullabaloo, 2nd Fl.**
	Session Chair: David Moorcroft, Federal Aviation Adminstration	**Session Chair: Joshua Kaizer, Nuclear Regulatory Commision**
Session 1 **10:15 am - 11:55 am**	**08-01 VVUQ for Solid Mechanics, Structures, Impact, and Blast**	**09-01 VVUQ for Nuclear Power Applications**
1	VVS2022-86800 Sensitivity Analysis and Bayesian Calibration of a Holmquist-Johnson-Cook Material Model for Cellular Concrete Subjected to Impact Loading Presenting Author: Brad Davis **Technical Pubication**	VVS2022-97906 High-Fidelity Experiments for the Validation of Computational Models for the Flow of Coolant in Nuclear Fuel Rod Assemblies Presenting Author: Camila Matozinhos
2	VVS2022-86808 Linking Material Models Between Codes: Establishing Thermodynamic Consistency Presenting Author: Joanne Budzien **Technical Pubication**	VVS2022-97913 Generation of a Dataset of Cfd Simulations of Wire-Wrapped Nuclear Fuel Rod Bundles Using Star-Ccm+ and Modeling of Pressure Drop and Flow Split Using Artificial Neural Networks Presenting Author: Gabriel Tomaz
3	VVS2022-88419 Dynamic Characterization of a Construction Vehicle Substructure Using a Combined Deterministic and Stochastic Analysis Presenting Author: Hongan Xu	VVS2022-89460 Process Data Reconciliation ("Pdr") - the Future in Plant Optimization Presenting Author: Magnus Langenstein
4	VVS2022-86932 Validation and Uncertainty Quantification in Predictive Multiphase Modeling of Silica Aerogels Building Insulations Presenting Author: Jingye Tan	
12:00 pm - 1:00 pm		*Lunch* *Century III, 1st Fl.*

	Session Chair: Nima Fathi, Texas A&M University **Track 1** **Reveille, 2nd Fl.**	**Session Chair: Pritha Ghosh, Schlumberger** **Track 2** **Hullabaloo, 2nd Fl.**
Session 2 **1:00 pm - 2:40 pm**	**03-01 Topics in Verification, Validation & Uncertainty Quantification**	**15-01 VVUQ for Artificial Intelligence and Machine Learning Models**
1	VVS2022-87890 Verification and Validation Using the Null Hypothesis as a Philosophical Grounding Presenting Author: William J. Rider	VVS2022-88397 A Reference Problem for Examination of Verification, Validation, and Uncertainty Quantification Methods Applied to Machine Learning Modeling and Simulation Presenting Author: Joshua Kaizer
2	VVS2022-88361 Development of an Intuitive, Numerical Measure for the Credibility of Model Predictions Presenting Author: Jakob Hartl	VVS2022-88400 Training Verification and Machine Learning Models Presenting Author: Joshua Kaizer
3	VVS2022-88390 Simulation-Informed Decision Making: Business and Government Experiences Presenting Author: William Oberkampf	VVS2022-87503 Data Credibility in Scientific Machine Learning Presenting Author: Kyle Neal
4	VVS2022-89128 Measuring the Thermal Conductivity of Buried Substrates by Steady-State Thermoreflectance Presenting Author: Md Shafkat Bin Hoque	
2:40 pm - 3:00 pm		*Break*

Session 3 **3:00 pm - 4:00 pm**	**02-01 Development and Application of Verification, Validation, Uncertainty Quantification Standards** **Century IV, 1st Fl.** **Overview of Key Updates from the ASME VVUQ Standards Development Subcommittees:** **VVUQ 10 - Computational Solid Mechanics** **VVUQ 20 - Computational Fluid Dynamics and Heat Transfer** **VVUQ 30 - Nuclear System Thermal Fluids Behavior** **VVUQ 40 - Computational Modeling of Medical Devices** **VVUQ 50 - Computational Modeling for Advanced Manufacturing** **VVUQ 60 - Computational Modeling in Energy Systems** **VVUQ 70 - Machine Learning** **Open Discussion of Specific Standards Projects**
Session 4 **4:00 pm - 4:45 pm**	Student Poster / Presentation Showcase Century IV, 1st Fl. VVS2022-88221 Solution Verification and Analysis of Xrage Modeling of the Rayleigh-Taylor Instability Presenting Author: Allyson Leffler VVS2022-88370 First Principles Analysis on the Strain-Induced Variation of Adsorption Behavior of Gas Molecules on Graphene Presenting Author: Meng Yin VVS2022-88375 Molecular Dynamics Analysis on the Creep-Fatigue Damage Around a Grain Boundary in Ni-Base Alloy at Elevated Temperature Presenting Author: Shogo Tezuka
4:45 pm - 5:00 pm	**Closing Remarks**

Close of Symposium