ASME VVUQ 2023
Verification, Validation and Uncertainty Quantification Symposium

Program

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SETTING THE STANDARD

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Dear VVUQ Symposium Attendee,

On behalf of the Organizing Committee, I want to welcome you to the Verification, Validation, and Uncertainty Quantification symposium! We are happy to have you join us for this important event. VVUQ is essential to ensure that the results of these methods are reliable and accurate, as it provides a systematic approach to assess and reduce uncertainties associated with these methods. In today's world, where computational models are widely used in engineering, science, and technology, the need for VVUQ has never been more critical. This symposium provides a platform for experts from academia, industry, and government agencies to exchange ideas, discuss challenges, and present solutions related to VVUQ. We hope you enjoy the symposium and take away valuable insights on this important topic.

Joshua Kaizer
VVUQ 2023 Conference Chair

VVUQ 2023 Symposium Organizing Committee

Jeff Bischoff	*Gregory Banway*
Jeff Bodner	*Luis Eca*
Yassin Hassan	*Marc Horner*
Kevin Dowding	

ASME VVUQ 2023

Monday 5/15/2023	Tuesday 5/16/2023	Wednesday 5/17/2023	Thursday 5/18/2023	Friday 5/19/2023
Committee Meetings Kimpton Hotel See link below for schedule	**Committee Meetings Kimpton Hotel See link below for schedule**	**VVUQ 2023 Symposium Kimpton Hotel Monaco Baltimore**	**VVUQ 2023 Symposium Kimpton Hotel Monaco Baltimore**	**VVUQ 2023 Symposium Kimpton Hotel Monaco Baltimore**
[Committee Meeting Schedules](#)	[Committee Meeting Schedules](#)	**Breakfast** Paris Ballroom Third Floor 8:00 AM - 8:45 AM	**Breakfast** Paris Ballroom Third Floor 8:00 AM - 8:45 AM	**Breakfast** Paris Ballroom Third Floor 8:00 AM - 8:45 AM
Learning & Development Training Paris South, Lobby Level	**Learning & Development Training Vienna South, Lobby Level**	**Keynote Dr. Barna Szabó** Presentation Title: *Simulation Governance: An Idea Whose Time Has Come* **Athens Ballroom Lobby Level** 9:15 AM-10:15 AM	**Keynote Chris Stanek** Presentation title: *Integrating VVUQ in to Nuclear Energy Advanced Modeling and Simulation* **Athens Ballroom Lobby Level** 9:15 AM-10:15 AM	**Keynote Scott Sidener** Presentation Title: *Can VVUQ keep up with AI/ML? Practical Application Needs for ML Models* **Athens Ballroom Lobby Level** 9:15 AM-10:15 AM
		Break Athens Foyer Lobby Level 10:15 AM - 10:30 AM	**Break** Athens Foyer Lobby Level 10:15 AM - 10:30 AM	**Break** Athens Foyer Lobby Level 10:15 AM - 10:30 AM
		Technical Session 1 Track 1 - Caracas **Track 2** -Vienna South **Lobby Level** 10:30 AM - 12:10 PM	**Technical Session 1 Track 1** - Caracas **Track 2** -Vienna South **Lobby Level** 10:30 AM - 12:35 PM	**Technical Session 1 Athens Ballroom Lobby Level** 10:30 AM - 12:10 PM
		Lunch Paris Ballroom Third Floor 12:15 PM - 1:15 PM	**Lunch** Paris Ballroom Third Floor 12:45 PM - 1:45 PM	**Close of Symposium**
		Technical Session 2 Track 1 - Caracas **Track 2** -Vienna South **Lobby Level** 1:15 PM - 2:55 PM	**Technical Session 2 Track 1** - Caracas **Track 2** -Vienna South **Lobby Level** 1:45 PM - 3:25 PM	
		Break Athens Foyer Lobby Level 3:00 PM - 3:15 PM	Break Athens Foyer Lobby Level 3:30 PM - 3:45 PM	
		Technical Session 3 Track 1 - Caracas **Track 2** -Vienna South **Lobby Level** 3:15 PM - 4:55 PM	**Technical Session 3 Track 1** - Caracas **Track 2** -Vienna South **Lobby Level** 3:45 PM - 5:50 PM	
		Reception Vienna North Lobby Level 5:00 PM - 6:00 PM		

ACKNOWLEDGEMENT

The Verification, Validation, and Uncertainty Quantification Symposium is sponsored by ASME. All technical sessions and conference events will take place at Kimpton Hotel Monaco Baltimore. Please check the schedule for event times and locations.

REGISTRATION FEES

Full Registration Fee includes:

· Admission to all technical sessions.

· All scheduled meals.

· Symposium program with abstracts.

One-day Registration Fee includes Admission to events above for that day.

NAME BADGES

Name badges should be worn always during the conference. You will need it for admission to all conference functions unless otherwise noted. Your badge also provides a helpful introduction to other attendees.

FREE ASME MEMBERSHIP

Non-ASME Members who pay the non-Member conference registration fee, including students who pay the non-Member student fee, will be offered a 4-month trial ASME Membership (complimentary) following the conference. Please allow approximately 4 weeks after the conclusion of the conference for your membership to become active. Visit www.asme.org/membership for more information about the benefits of ASME Membership.

INTERNET ACCESS IN THE HOTEL

Complimentary Wi-Fi is available in your sleeping room and in the meeting space at the Kimpton Hotel Monaco Baltimore. To access the Wi-Fi in the meeting space, open a browser and look for the **SSID - ASME** and the **Password** - **VVUQ2023.**

EMERGENCY

In case of an emergency in the hotel, pick up any house phone which rings directly at the operator, and they can dispatch help.

ACCESSIBILITY AND GENERAL QUESTIONS

Whenever possible, we are pleased to accommodate attendees with special needs. Advance notice may be required for certain requests. For on-site assistance related directly to the conference events and for general conference questions, please visit the ASME registration desk located in the Athens Foyer. For special needs related to your hotel stay, please visit the hotel front desk.

ONSITE REGISTRATION HOURS

Location: Athens Ballroom Foyer

Tuesday, May 16, 2023	1:00 PM - 5:00 PM
Wednesday, May 17, 2023	8:00 AM - 5:00 PM
Thursday, May 18, 2023	8:00 AM - 5:00 PM

Breakfast & Lunch will be in the Paris Ballroom on the third floor

Keynotes

May 17, 2023, 9:00 AM ET

Dr. Barna Szabó
Engineering Software Research and Development, Inc

Presentation Title: Simulation Governance: An Idea Whose Time Has Come

Dr. Barna Szabó is Co-Founder and Chairman of Engineering Software Research and Development, Inc. a company whose mission is to create and market software tools for the advancement of the quality, reliability and timeliness of information that serves engineering decision-making processes.

Dr. Szabó was a full-time member of the faculty of the School of Applied Science and Engineering at Washington University in St. Louis from 1968 until his retirement as the Albert P. and Blanche Y. Greensfelder Professor of Mechanics. His areas of expertise include mathematical modeling techniques, error estimation and quality control procedures in finite element analysis, methods for controlling modeling errors in numerical simulation and assurance of the reliability of engineering decisions based on computed information.

Dr. Szabó is the principal author of three textbooks on finite element analysis (John Wiley & Sons, 1991 2011, 2021) and has published over two hundred technical papers, mostly on the finite element method.

Dr. Szabó is an external member of the Hungarian Academy of Sciences, Fellow of the St. Louis Academy of Sciences, holds an honorary doctorate and is a founding member and fellow of the US Association for Computational Mechanics. He is a registered Professional Engineer in the State of Missouri.

May 18, 2023, 9:00am ET

Chris Stanek

U.S. DOE, Office of Nuclear Energy, Nuclear Energy Advanced Modeling and Simulation (NEAMS) program and Los Alamos National Laboratory

Presentation Title: Integrating VVUQ into Nuclear Energy Advanced Modeling and Simulation

Chris Stanek is the National Technical Director of the U.S. DOE, Office of Nuclear Energy, Nuclear Energy Advanced Modeling and Simulation (NEAMS) program and a staff scientist at Los Alamos National Laboratory. He was previously the focus area lead of Materials Performance Optimization for the Consortium for Advanced Simulation of LWRs (CASL) Energy Innovation Hub. Stanek received his B.S. in Materials Science and Engineering at Cornell University and his Ph.D. in Materials from Imperial College London. His research focuses on multiscale simulation of nuclear fuel performance, and he has published over 120 papers on this and related topics.

May 19, 2023, 9:00 AM ET

Scott Sidener
Chief Engineer of Digital Technology, Westinghouse Electric Company

Presentation Title: Can VVUQ keep up with AI/ML? Practical Application Needs for ML Models

Scott Sidener is the Chief Engineer of Digital Technology for Westinghouse Electric Company. He has 27 years of experience in the nuclear industry innovating and applying probabilistic modeling and simulation, V&V, data science, machine learning and artificial intelligence, statistical analysis, and materials science. He leads the Westinghouse digital enablement, digital twin, and data science strategies.

WEDNESDAY, MAY 17, 2023

5/17/2023
04-01 Verification Methods
10:30 AM to 12:10 PM - Caracas, Lobby Level
Chair: *Luis Eca - IST*
Chair: *Yassin Hassan - Professor, Texas A&M*

Code-Verification Techniques for the Method-of-Moments Implementation of the Magnetic-Field Integral Equation, {VVS2023-106433} Technical Presentation Only
　　Brian Freno - Sandia National Laboratories
　　Neil Matula - Sandia National Laboratories

New Verification Method for Deterministic and Stochastic Codes, {VVS2023-109542} Technical Presentation Only
　　Aaron Krueger - Sandia National Laboratories
　　Casey Jelsema - Sandia National Laboratories
　　Timothy Smith - Sandia National Laboratories
　　Andy Huang - Sandia National Laboratories

Attaining the Asymptotic Range in RANS Simulations, {VVS2023-108745} Technical Paper Publication
　　Maarten Kerkvliet - Maritime Research Institute Netherlands
　　Serge Toxopeus - Maritime Research Institute Netherlands
　　Luís Eça - IST

Self-Similarity as a Tool for Verification, {VVS2023-110569} Technical Presentation Only
　　Jim Ferguson - Los Alamos National Laboratory
　　Steven Anderson - Los Alamos National Laboratory

5/17/2023
05-01 Validation Methods
10:30 AM to 11:45 AM - Vienna South, Lobby Level
Chair: *Aaron Koskelo - Los Alamos National Laboratory*

Probabilistic Deep Learning for Validation of Emergent Structures in Simulated Images, {VVS2023-108722}
Technical Paper Publication
　　Bryan Kaiser - Los Alamos National Laboratory
　　Kyle Hickmann - Los Alamos National Laboratory

Methodology for Validation of Finite Element Analysis Utilizing Strain Gauge Measurements, {VVS2023-108749}
Technical Paper Publication
  Rafal Sulwinski - T.D. Williamson
  Rusty Johnston - T.D. Williamson

Experimental Measurement and Analysis Techniques for Validation, {VVS2023-109704}
Student Presentation
  Blake Maher - Texas A&M University
  Noah Sutton - Texas A&M University
  Yassin Hassan - Texas A&M University

5/17/2023
07-01 VVUQ for Fluid Dynamics and Heat Transfer
1:15 PM to 2:55 PM - Vienna South, Lobby Level
Chair: **Brandon M. Wilson - Los Alamos National Laboratory**

Validation and Verification Analyses of Turbulent Forced Convection of Na and NaK in Miniature Heat Sinks, {VVS2023-108819}
Technical Paper Publication
  Mahyar Pourghasemi - Mechanical Eng Dep, University of New Mexico
  Nima Fathi - Texas A & M University

An Uncertainty Quantification Practice of Discretization Errors in Unsteady Rans Simulations of Bluff Body Aerodynamics: Grid Convergence Index Approach vs. Least Square Approach, {VVS2023-109492}
Technical Presentation Only
  Donghun Yeo - National Institute of Standards and Technology
  Tarak Nandi - National Institute of Standards and Technology

Code Verification of a Hypersonic Boundary Layer Code by the Method of Manufactured Solutions, {VVS2023-109552}
Technical Presentation Only
  Jared Kirsch - Texas A&M University
  Matthew Bopp - Sandia National Laboratories
  Aaron Krueger - Sandia National Laboratories
  Blake Lance - Sandia National Laboratories

Solution Verification of Materials Mixing Turbulent Flow Simulations, {VVS2023-109649}
Technical Presentation Only
  Filipe Pereira - Los Alamos National Laboratory
  Luis Eca - Instituto Superior Tecnico

5/17/2023
09-01 VVUQ for Solid Mechanics, Structures, Impact, and Blast
1:15 PM to 2:55 PM - Caracas, Lobby Level
Chair: *David Moorcroft - Federal Aviation Administration*

Impact Limiter Computer Simulation and Verification by Drop Tests, {VVS2023-108557}
Technical Paper Publication
 Kalyan K. Niyogi - Holtec International
 Xuejun Zhai - Holtec International

Variational Bayesian Calibration of a PTW Material Strength Model for OFHC Copper, {VVS2023-108829}
Technical Paper Publication
 Stephen A. Andrews - Los Alamos National Laboratory
 Brandon M. Wilson - Los Alamos National Laboratory

Use of Validation Suites to Enhance Communication: Example of Ejecta From Shocked Metal Surfaces, {VVS2023-109383} Technical Presentation Only
 Joanne Budzien - Los Alamos National Laboratory

Multi-Instrumented Testing: The Challenges of Developing a Simulation Validation Platform for the Ariane 6 Galileo Dispenser, {VVS2023-109721}
Technical Presentation Only
 Pierre Baudoin - EikoSim
 Nicolas Swiergiel - ArianeGroup
 Florent Mathieu - EikoSim

5/17/2023
06-01 Methods for Uncertainty Quantification, Sensitivity Analysis, and Prediction
3:15 PM to 4:30 PM - Caracas, Lobby Level
Chair: *Joshua Kaizer - U.S. Nuclear Regulatory Commission*

Uncertainty Reduction in Fatigue Life Validation Testing for Drilling Tools With a Universal Runout Compensator, {VVS2023-107686} Technical Paper Publication
 Michael Du - SLB
 Fei Song - SLB
 Ke Li - SLB

Uncertainty Quantification of Finite Element Strain Predictions for a Nitinol Medical Device: Influence of Input Parameter Probability Distribution on Output Uncertainty, {VVS2023-107816}
Technical Presentation Only
 Ian Carr - US Food and Drug Administration
 Kenneth Aycock - US Food and Drug Administration
 Harshad Paranjape - Confluent Medical Technologies
 Craig Bonsignore - First Article Services LLC
 Jason Weaver - US Food and Drug Administration
 Brent Craven - US Food and Drug Administration

Extension of Error Transport Equations to Domains With Curved Boundaries, {VVS2023-109486}
Student Presentation
>*Will Jordan - Virginia Tech*
>*Chris Roy - Virginia Tech*

5/17/2023
07-02 VVUQ for Fluid Dynamics and Heat Transfer
3:15 PM to 4:55 PM - Vienna South, Lobby Level
Chair: ***Brandon M. Wilson - Los Alamos National Laboratory***

Verification Methods for Planar Shock Reflections Over Wedges, {VVS2023-109345} Technical Presentation Only
>*Allyson Leffler - Los Alamos National Laboratory*
>*Jasper Thrussell - Los Alamos National Laboratory*
>*Jim Ferguson - Los Alamos National Laboratory*
>*Steven Anderson - Los Alamos National Laboratory*

Numerical Assessment of Transition to Turbulent Regime in Triply Periodic Minimal Surfaces, {VVS2023-109714}
Technical Presentation Only
>*Eleonora Gajetti - Politecnico di Torino*
>*Antonio Buffo - Politecnico di Torino*
>*Gianluca Boccardo - Politecnico di Torino*
>*Luca Marocco - Politecnico di Milano*
>*Laura Savoldi - Dipartimento Energia, Politecnico Di Torino*

Code-to-Code Benchmark for Laminar and Turbulent Flows in Triply Periodic Minimal Surfaces, {VVS2023-109731}
Technical Presentation Only
>*Marco Carbotta - Politecnico di Torino*
>*Eleonora Gajetti - Politecnico di Torino*
>*Luca Marocco - Politecnico di Milano*
>*Laura Savoldi - Politecnico di Torino*

Error Transport Equations for Unsteady Problems With Shock Discontinuities, {VVS2023-109496}
Student Presentation
>*Michael Ganotaki - Virginia Tech*
>*Will Jordan - Virginia Tech*
>*Christopher Roy - Virginia Tech*

THURSDAY, MAY 18, 2023

5/18/2023
08-01 VVUQ for Nuclear and Industrial Applications
10:30 AM to 12:35 PM - Caracas, Lobby Level
Chair: *Aaron Krueger - Sandia National Laboratories*

Numerical Assessment of Hydraulic Properties of Triply Periodical Minimal Surfaces Structures, {VVS2023-108794}
Technical Paper Publication
    Cecilia Piatti - Politecnico di Torino
    Laura Savoldi - Politecnico di Torino
    Nima Fathi - Texas A&M University

Using Code Adequacy Methodologies in Conformance With ASME Standards for Nuclear Power Plant Analysis Evaluation Models, {VVS2023-108796}
Technical Paper Publication
    Richard R. Schultz - Idaho State University
    George L. Mesina - Idaho National Laboratory

Validation of Internal Nozzle Fuel Spray Simulations Under Flashing and Non-Flash Boiling Conditions, {VVS2023-110089}
Student Presentation
    Aman Kumar - University of Massachusetts Lowell
    Noah Van Dam - University of Massachusetts Lowell

The Differences Between Statistical and Spatial Monte Carlo Sampling, {VVS2023-109785}
Technical Presentation Only
    Joshua Kaizer - U.S. Nuclear Regulatory Commission

Experimental Validation Methodology of a Prototypical Helical Coil Steam Generator Undergoing Flow-Induced Vibrations, {VVS2023-109745}
Student Presentation
    Noah Sutton - Texas A&M University
    Blake Maher - Texas A&M University
    Yassin Hassan - Texas A&M University

5/18/2023
11-01 VVUQ for Biomedical Engineering
10:30 AM to 12:35 PM - Vienna South, Lobby Level
Chair: *Marc Horner - ANSYS, Inc.*
Chair: *Kenneth Aycock - US Food and Drug Administration*

Digital Image Correlation Validation of Finite Element Strain Analysis of Dental Implant Insertion for Two Implant Designs, {VVS2023-107659}
Technical Paper Publication
    Baixuan Yang - Queen's University
    Ainara Irastorza-Landa - Nobel Biocare Services AG
    Peter Heuberger - Nobel Biocare Services AG
    Heidi-Lynn Ploeg - Queen's University

![ASME VVUQ 2023]

A Tiered Validation of a Sapien-3 Tavi Fem-Model Considering Mixed Epistemic/aleatoric Uncertainty, {VVS2023-109183} Technical Presentation Only
> *Nils Götzen - 4RealSim Services BV*
> *Tahir Turgut - 4RealSim Services BV*
> *Omar Zahalka - 4RealSim Services BV*
> *Vincent Bouwman - 4RealSim Services BV*

Towards Full-Field Strain Measurements for Validating Medical Device Computational Solid Mechanics Simulations, {VVS2023-109685} Technical Presentation Only
> *Hadi Mirmohammad - Food and Drug Administration*
> *Jacob Hochhalter - University of Utah*
> *Andrew Cannon - 1900 Engineering*
> *Daniel Porter - Food and Drug Administration*
> *Jason Weaver - Food and Drug Administration*
> *Brent Craven - Food and Drug Administration*
> *Kenneth Aycock - Food and Drug Administration*

Validation of a Bone Analog Virtual Model for the Prediction of Screw Pullout Forces According to Astm F543 Standard, {VVS2023-109733} Technical Presentation Only
> *David Benoit - Numalogics*
> *Franck Le Navéaux - Numalogics*
> *Amy Posch - Pacific Research Laboratories*
> *Julien Clin - Numalogics*

A Multi-Patient Study for Correlation of Growth-Rod Fracture Data With Predicted High Stress Regions in Pediatric Scoliosis Using a Patient-Specific Finite Element Approach, {VVS2023-109737} Technical Presentation Only
> *Vivek Palepu - US Food and Drug Administration*
> *Daksh Jayaswal - University of Toledo*
> *Amey Kelkar - University of Toledo*
> *Manoj Kodigudla - University of Toledo*
> *Vijay Goel - University of Toledo*

5/18/2023
14-01 VVUQ for Artificial Intelligence and Machine Learning Models
1:45 PM to 3:00 PM - Caracas, Lobby Level
Chair: *Gregory Banyay - APPLIED RESEARCH LABORATORY*

Solution Verification of Neural Network-Based Regression Models, {VVS2023-108210} Technical Presentation Only
> *Alexander Mace - Westinghouse Electric Company*
> *Mario Buczkowski - Westinghouse Electric Company*
> *Scott Sidener - Westinghouse Electric Company*

Training and Interpretability of Deep-Neural Methods for Damage Calibration in Copper, {VVS2023-108759} Technical Paper Publication
> *Kyle Hickmann - Los Alamos National Laboratory*

Skylar Callis - Los Alamos National Laboratory
Stephen Andrews - Los Alamos National Laboratory

Application of Generative Deep Learning to Data-Driven Model Validation, {VVS2023-109042}
Technical Presentation Only
    Babajide Kolade - Fitila Technologies

5/18/2023
11-02 VVUQ in Biomedical Engineering
1:45 PM to 3:25 PM - Vienna South, Lobby Level
Chair: *Gurpreet Singh - NuVasive*
Chair: *Chris Basciano - BD*

A Closer Look at the Gradation Descriptions for Risk-Informed Credibility Assessment of an Astm F2077 Computational Model, {VVS2023-105942} Technical Presentation Only
    Gurpreet Singh - NuVasive
    Niloufar Shekouhi - NuVasive
    Michael Jekir - NuVasive

Credibility of a Computational Model to Predict Modular Junction Dissociation, {VVS2023-117650} Technical Presentation Only
    Mehul Dharia - Zimmer Biomet
    Maged Awadalla - Zimmer Biomet
    Kimberly Mimnaugh - Zimmer Biomet
    Saandeep Mani - Zimmer Biomet
    Philippe Favre - Zimmer Biomet
    Jeffrey Bischoff - Zimmer Biomet

Code Verification and Sensitivity Analysis on Flows Through Isotropic, Capillary-Tube Porous Media Relevant to Medical Devices, {VVS2023-110149} Technical Presentation Only
    Siva Balasubramanian - BD
    Christopher Basciano - BD
    Shelby Bieritz - BD
    Nathan Spangenberg - BD
    Siddharth Nagarajan - bd

Asme V&v 40 Tibial Tray Example: Assessing the Applicability of the Validation Activities to the Context of Use for Non-Identical Quantities of Interest, {VVS2023-117990} Technical Presentation Only
    Brandon Lurie - W. L. Gore & Associates

5/18/2023
03-01 Topics in Verification, Validation & Uncertainty Quantification
3:45 PM to 5:00 PM - Vienna South, Lobby Level
Chair: *Yassin Hassan - Professor, Texas A&M University*

Assessment of Properties of Numerical Procedures for Dynamic Problems of Nearly Incompressible Elasticity, {VVS2023-109712} Technical Presentation Only
    Takahiro Yamada - Yokohama National University

Application of VVUQ Concepts to ASME Codes and Standards for Pressure Vessels, {VVS2023-108506}
Technical Paper Publication
    Bart Kemper - Kemper Engineering Services, LLC

An Extension to the Predictive Capability Maturity Model to Assess Model Credibility Using Dempster-Shafer Theory, {VVS2023-108590} Technical Presentation Only
    Oliver Stover - Vanderbilt University
    Sankaran Mahadevan - Vanderbilt University

5/18/2023
14-02 VVUQ for Artificial Intelligence and Machine Learning Models
3:45 PM to 5:50 PM - Caracas, Lobby Level
Chair: ***Noah Van Dam - UMass Lowell***

Quantifying Data Uncertainty in Scientific Machine Learning, {VVS2023-109300} Technical Presentation Only
    Kyle Neal - Sandia National Laboratories
    Erin Acquesta - Sandia National Laboratories

Uncertainty Quantification of Physics-Informed Neural Network Models of Advection-Diffusion Equations, {VVS2023-109421} Technical Presentation Only
    Babajide Kolade - Fitila Technologies

Optimal Design Verification, {VVS2023-109701} Technical Presentation Only
    Gregory Banyay - APPLIED RESEARCH LABORATORY

Evaluation of Chemical Kinetics Dnn Time Stepping Errors, {VVS2023-110193} Student Presentation
    Ahmed Almeldein - Francis College of Engineering, University of Massachusetts Lowell
    Noah Van Dam - Francis College of Engineering, University of Massachusetts Lowell

Interpretability Methods for Deep Neural Networks as Applied to Tepla Damage Calibration in Copper, {VVS2023-109730} Technical Presentation Only
    Skylar Callis - Los Alamos National Lab

5/18/2023
01-01 Challenge Problems
5:00 PM to 550 PM - Vienna South, Lobby Level
Chair: *Yassin Hassan - Professor, Texas A&M University*

Virginia Tech-Nasa Cfd Turbulence Model Validation Challenge, {VVS2023-109675}
Technical Presentation Only
   Chris Roy - Virginia Tech
   Aldo Gargiulo - Virginia Tech
   Daniel Binu - Virginia Tech
   Agata Grzyb - Virginia Tech
   K. Todd Lowe - Virginia Tech
   William Devenport - Virginia Tech
   Aurelien Borgoltz - Virginia Tech

Flow Visualization and Temperature Measurement With Single Non-Isothermal Jet in a Hemispherical Upper Plenum for Benchmark Problem 3, {VVS2023-118738}
Technical Presentation Only
   Blake Maher - Texas A&M University
   Noah Sutton - Texas A&M University
   Yassin Hassan - Texas A&M University

FRIDAY, MAY 19, 2023

5/19/2023
03-02 Topics in Verification, Validation & Uncertainty Quantification
10:30 AM to 12:10 PM - Athens Ballroom, Lobby Level
Chair: *Nima Fathi - Texas A&M University*

Thoughts on Certification by Analysis, {VVS2023-109747} Technical Presentation Only
   William Oberkampf - W L Oberkampf Consulting
   Martin Pilch - MPilch Consulting

Flexible Adaptation of the Pcmm (Predictive Capability Maturity Model) to Other Simulation Technologies, {VVS2023-109533} Technical Presentation Only
   William Rider - Sandia National Laboratories
   Erin Acquesta - Sandia National Laboratories
   Jason Verley - Sandia National Laboratories

Uncertainty Aggregation Through Model Development and Assessment Towards Prediction, {VVS2023-109695}
Technical Presentation Only
   Andrew White - Rolls-Royce Corporation
   Sankaran Mahadevan - Vanderbilt University

The 2nd Law of Modeling & Simulation and a Systems Approach to Treatment of Aleatory and Epistemic Uncertainties, {VVS2023-109736} Technical Presentation Only
   Vicente Romero - Sandia National Laboratories

Thank You To Our Bag Sponsor

EikoSim - [Link](#)

EikoSim is a software company that aims at enabling its customers to establish a strong link between numerical simulations and physical tests. Our mission is to democratize validation practices in structural mechanics, by providing software tools that improve our customers' confidence in simulation to accelerate development through simulation. By leveraging large amounts of test data, EikoSim's customers build simulation credibility.

Women in Standards & Certification (WiSC)

Within ASME Standards & Certification (S&C), the Women in Standards & Certification (WiSC) initiative was established in Spring 2019 with a goal of enhancing the culture of ASME Standards and Certification by providing an inclusive and supportive environment for women. More information is located at [WiSC](#)

ASME VVUQ 2023

There are Many Ways to Contribute, Lead, Learn, and Connect - Be a Part of the Latest in VVUQ with ASME

Share best practices among the VVUQ technical community and foster the development of state-of-the-art products and events.

Volunteer for the ASME VVUQ Subcommittees – For a Rewarding Experience. Join today!

Apply consensus-based standards that are the essential resource for verification, validation and uncertainty quantification (VVUQ) in computational modeling and simulation.

ASME VVUQ 10 Verification, Validation, and Uncertainty Quantification in Computational Solid Mechanics
Provides procedures for assessing the correctness and credibility of modeling and simulation in computational solid mechanics.

ASME VVUQ 20 Verification, Validation, and Uncertainty Quantification in Computational Fluid Dynamics and Heat Transfer
Provides procedures for quantifying the accuracy of modeling and simulation in computational fluid dynamics and heat transfer.

ASME VVUQ 30 Verification, Validation, and Uncertainty Quantification in Computational Simulation of Nuclear System Thermal Fluids Behavior
Provides the practices and procedures for verification and validation of software used to calculate nuclear system thermal fluids behavior. The software includes system analysis and computational fluid dynamics, including the coupling of this software.

ASME VVUQ 40 Verification, Validation, and Uncertainty Quantification in Computational Modeling of Medical Devices
Provides procedures to standardize verification and validation for computational modeling of medical devices.

ASME VVUQ 50 Verification, Validation, and Uncertainty Quantification of Computational Modeling for Advanced Manufacturing
To provide procedures for verification, validation, and uncertainty quantification in modeling and computational simulation for

ASME VVUQ 60 Verification, Validation, and Uncertainty Quantification of Computational Modeling in Energy Systems
To develop and establish best practice procedures for uncertainty quantification in computational and simulations as applied in non-nuclear energy systems.

ASME VVUQ 70 Verification, Validation, and Uncertainty Quantification of Machine Learning
Coordinate, promote, and foster the development of standards that provide procedures for assessing and quantifying the credibility of machine learning algorithms applied to mechanistic and process modeling.

ASME VVUQ 80 Verification, Validation, and Uncertainty Quantification in Computational Modeling of Pharmaceutical Products
Provide procedures to standardize verification, validation, and uncertainty quantification in Computational Modeling of Pharmaceutical process development, manufacturing, and drug delivery.

VVUQ 90 Verification, Validation, and Uncertainty Quantification in Computational Modeling of Airframe Structures
Coordinate, promote, and foster the development of standards that provide procedures for assessing and quantifying the accuracy and credibility of computational models and simulations.

To learn more, visit: go.asme.org/ParticipateInStandards

Resources and Events

ASME Master Classes and Webinars
Learn terminology, concepts, examples and applications in interactive training seminars and webinars given by VVUQ experts.

Journal of Verification, Validation and Uncertainty Quantification (JVVUQ)
Stay up-to-date on discipline-specific applications, and development and assessment of new methodologies for VVUQ.

VVUQ Symposium Conference Proceedings (VVS) and Presentations
View conference proceedings and presentations from previous symposia.

Challenge Problems
Participate in challenge problems which are sponsored by the VVUQ Subcommittees and designed to assess VVUQ approaches.

Questions - Contact:

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