

# Nuclear Technology

VOLUME 205 · NUMBER 12 · DECEMBER 2019

## Selected papers from the 2018 Best Estimate Plus Uncertainty International Conference (BEPU 2018)

### Contents

- iii Foreword  
*Alessandro Petruzzi, Kostadin Ivanov, Evgeny Ivanov*

### CRITICAL REVIEW

- 1513 Challenges in Application of BEPU for Risk Evaluations  
*Dumitru Serghiuta, John Tholammakkil*

### TECHNICAL PAPERS

- 1529 Best Estimate Plus Uncertainty (BEPU): Why It Is Still Not Widely Used  
*Evgeny Ivanov, Giovanni Bruna, Antonio Sargeni, Franck Dubois*
- 1540 Verification and Validation and Uncertainty Quantification of Code Models  
*Tomasz Skorek*
- 1554 The CASUALIDAD Method for Uncertainty Evaluation of Best-Estimate System Thermal-Hydraulic Calculations  
*A. Petruzzi*
- 1567 RIPS, a Statistical Method for Characterizing the Limiting Scenario in a BEPU Approach  
*Jean-Christophe Lecoy, Jean-Yves Sauvage, Camille Charignon*
- 1578 Applications of Multivariate Normal Bayesian Models in Nuclear Engineering  
*Axel Hoefer, Oliver Buss, Michael Schmid*
- 1588 Advanced Methodology for Uncertainty Propagation in Computer Experiments with Large Number of Inputs  
*Bertrand looss, Amandine Marrel*
- 1607 Quantified Validation with Uncertainty Analysis for Turbulent Single-Phase Friction Models  
*Nathan W. Porter, Vincent A. Mousseau, Maria N. Avramova*
- 1618 Uncertainty Quantification and Propagation of Multiphysics Simulation of the Pressurized Water Reactor Core  
*Kaiyue Zeng, Jason Hou, Kostadin Ivanov, Matthew Anderson Jessee*

—continued—

## Contents continued

VOLUME 205 · NUMBER 12 · DECEMBER 2019

- 1638** Global Sensitivity and Registration Strategy for Temperature Profile of Reflood Experiment Simulations  
*Grégory Perret, Damar Wicaksono, Ivor D. Clifford, Hakim Ferroukhi*
- 1652** Proposal of a Statistical Evaluation Method for the Criticality of the Fukushima Daiichi Nuclear Power Plants  
*Yuichi Morimoto, Masanori Akaike, Satoshi Takeo, Hiromi Maruyama*
- 1661** BEPU Method Applied to CFD Simulation of Mixing Flows  
*Andrej Prošek, Boštjan Končar, Matjaž Leskovar*
- 1675** Cross-Section Generation Using TXT2NTAB Code for Uncertainty Propagation with Burnup Dependence  
*A. Labarile, C. Mesado, R. Miró, G. Verdú*
- 1685** A Mutual Information–Based Experimental Design Framework to Use High-Fidelity Nuclear Reactor Codes to Calibrate Low-Fidelity Codes  
*Natalie Gordon, Lindsay Gilkey, Ralph C. Smith, Isaac Michaud, Brian Williams, Vincent Mousseau, Russell Hooper, Chris Jones*
- 1697** Implementation of a Spacer Grid Rod Thermal-Hydraulic Reconstruction (ROTHCON) Capability into the Thermal-Hydraulic Subchannel Code CTF  
*Robert K. Salko, William D. Pointer, Marc-Oliver Delchini, William L. Gurecky, Kevin T. Clarno, Stuart R. Salttery, Victor Petrov, Annalisa Manera*