The proceeding materials will be distributed in a flash drive. The abstract shall be about 250 to 400 words and anyway limited to one page only. The limit for BEPU-2018 paper submissions is 14 pages and shall be supplemented with a file size less than 10MB. Selected papers will be published in the Special issues of NED (Nuclear Engineering and Design), NT (Nuclear Technology), etc. Latest news about the conference can be found at: www.nineeng.com/bepu

**Objective:** The objective of the Conference is to provide a forum to exchange experience and views among professionals in the nuclear industry, specifically in development and use of Best Estimate Plus Uncertainty (BEPU) methods in safety analyses and design of nuclear installations. The Conference will address a broader spectrum of methods (in respect to the past when the focus was primarily on thermal-hydraulic system codes) and also include reactor physics, fuel performance, severe accidents, fission product transport and chemistry, dispersion, etc. Generally speaking the multi-physics of the problems will be addressed, as well the numerics and computational platforms including distributed computing. The BEPU 2018 will include also CFD codes, simulators and problems of modeling I&C in systems safety analyses. Another issue which will be addressed is the problem of the verification and validation of methods and of the supporting experimental programs. The Conference will consider applications mainly to Light Water Reactors including Small Modular Reactors, even though the liquid metal cooled, gas cooled, molten salt (cooled and homogeneous reactors) and other types that are in development will be included as well as the research reactors.

**Expected Outcome:** The expected outcome of the Conference is an overview of state of the art of BEPU methods. The Conference shall identify problems related to development of BEPU methods, provide insights into use of BEPU in licensing, design and safety evaluation, highlight issues related verification and validation including supporting experimental programme and fidelity of experimental measurements and identify related needs of the stakeholders. We also expect some practical views and guidance on the future of BEPU methods.

**Structure of the conference:** The Conference is organized in Plenary Sessions, Regular Sessions, and Panel Discussions Sessions to promote intensive interactions among all conference participants. Also poster and student sessions are envisaged.
TOPICS AND SESSIONS

PLENARY SESSIONS
• BEPU Methodologies: Technical, Licensing, and Regulatory Requirements
• BEPU Methodologies and V&V Process
• BEPU in Thermal-Hydraulics: Current issues, Challenges and Future Perspectives
• BEPU in Reactor Physics: Current issues, Challenges and Future Perspectives
• BEPU in Fuel Behavior Analysis: Current issues, Challenges and Future Perspectives
• Multi-physics and Multi-scale Simulation Tools: are the “Traditional” BEPU Methodologies enough?

CONFERENCE SESSIONS

A. BEPU METHODOLOGY: TECHNICAL AND REGULATORY REQUIREMENTS
A1. Licensing and Regulatory Requirements for BEPU
A2. V&V and BEPU
A3. Scaling Issue and BEPU
A4. Experimental Measurement Uncertainties and BEPU

B. UNCERTAINTY METHODOLOGY DEVELOPMENTS
B1. Statistical Methods
B2. Bayesian Methods
B3. Hybrid Methods

C. BEPU FOR MULTIPHYSICS (MP) APPLICATIONS
C1. Thermal-Hydraulics (and I&C simulators) and Reactor Physics
C2. Reactor Physics and Fuel Performance
C3. Thermal-Hydraulics, Reactor Physics and Fuel Performance
C4. BEPU and Distributed Computing for MP
C5. Role of CFD and of Structural Mechanics for MP BEPU
C6. BEPU Challenges for MP Applications and Numerical Issues
C7. Best-Estimate for Design Extension Condition (DEC) including Severe Accidents and Uncertainty Evaluation

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Dr. Monti S. (IAEA, Austria)

D. BEPU APPLICATIONS IN SAFETY ANALYSIS AND LICENSING FRAMEWORK
D1. Light Water Reactor (PWR, WWER and BWR)
D2. Heavy Water Reactors (CANDU, PHWR)
D3. Small Modular Reactors

E. OTHER BEPU APPLICATION RESULTS
E1. BEPU Methods & Results for Passive System Applications
E2. BEPU Methods & Results for GEN-IV & Other New Designs
E3. BEPU Methods and Results for Design Extension Conditions
E4. BEPU Methods & Results for Research Reactor
E5. BEPU Methods & Results for Simulator Applications

F. RECOMMENDATIONS AND FINDINGS FOR DEVELOPING FUTURE BEPU METHODOLOGIES
F1. International Program Findings and Recommendations
F2. Methodologies for Uncertainty Quantification in Non-Nuclear Disciplines
F3. Requirements for BEPU from Multi-physics and Multi-scale Simulation Tools