

Workshop Proposal for NURETH-17 (Xi'an, China, September 3<sup>rd</sup>, 2017)

**Title:** High-resolution single- and two-phase flow analysis and model development

**Length:** Half-day (4 hours)

**Organizer:** Igor A. Bolotnov (NCSU)

**Lecturers:** Philippe Bardet (GWU), Igor A. Bolotnov (NCSU), Michael Z. Podowski (RPI) and W. David Pointer (ORNL)

**Abstract:** Rapid growth of affordable computing power and high-resolution experimental techniques is creating new opportunities in 3D flow analysis and model development in nuclear thermal-hydraulics applications. The workshop will give a general overview of 3D high-fidelity methods usable to generate physically-based results of flow behavior. Second part will be focused on flow analysis methods used to inform the development of closure models based on experimental and simulated data for lower-fidelity codes. Capability showcase of for nuclear related single- and two-phase flow simulations and experiments produced using the discussed methods will be presented.

**Schedule (Sunday, September 3<sup>rd</sup>):**

Time	Title	Lead
<b>1:30pm</b> 1:35pm	Introduction	Bolotnov
<b>1:35pm</b> 2:20pm	Overview of DNS approach, including interface tracking methods	Bolotnov
<b>2:20pm</b> 2:30pm	Break	
<b>2:30pm</b> 3:15pm	High fidelity experiments of single and multiphase flows	Bardet
<b>3:15pm</b> 3:30pm	Break	
<b>3:30pm</b> 4:15pm	On the Use of Multiscale Approach and High Fidelity Data in the Development of Multiphase CFD Models and Mechanistic Closure Laws	Podowski
<b>4:15pm</b> 4:25pm	Break	
<b>4:25pm</b> 5:10pm	Overview of single and two-phase CFD results, nuclear thermal hydraulics simulations and model development insights	Pointer
<b>5:10pm</b> 5:30pm	Model development challenges discussion	Bolotnov