

SWINTH-2016

Specialists Workshop on Advanced Instrumentation and Measurement Techniques for Nuclear Reactor Thermal Hydraulics



An initiative of

SILENCE Network

**SIGNIFICANT LIGHT & HEAVY WATER REACTOR THERMAL-HYDRAULIC EXPERIMENTS
NETWORK FOR THE CONSISTENT EXPLOITATION OF THE DATA**

Background, Scope and Objectives of the Workshop

- Significant advances have been accomplished in the instrumentation for two-phase flow since the OECD/CSNI Specialists Meeting on Advanced Instrumentation and Measurement Techniques held in Santa-Barbara, California, US, on March 17-20, 1997. Then the idea of organizing a new international workshop on instrumentation and measurement techniques emerged during previous SILENCE meetings. It is consistent with both the “vision” and the “mission” of SILENCE Network, which promotes and fosters the establishment of a common ground for cooperation and discussion on thermal-hydraulic experiments, and wants to promote new experiments, including improvements of the existing measurement techniques.
- The purpose of this Specialists Workshop on Advanced Instrumentation and Measurement Techniques for Nuclear Reactor Thermal Hydraulics is to bring together international experts on instrumentation, experiments and modelling in order to:
 - review the recent instrumentation and experiment techniques developments;
 - identify the specific experimental needs that arose from the development of modern simulation tools including system codes, component codes, and computational multi-fluid dynamics (CMFD) codes provided with advanced models such as dynamic interfacial area modelling, poly-dispersion modelling of bubbly and droplet flow, multi-field models and two-phase turbulence models;
 - discuss future directions for instrumentation developments, modelling and experiments.

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- The subject is wide and complex and deserves “dedicated” discussion; therefore, specialized workshops such as the present one would be complementary to other events on code development and verification and validation (V&V) and initiatives in which the experimental area is not covered with sufficient detail and focus.
- The following topics are included in the Workshop:
 - modelling needs for closure relations in current and advanced 1D models and in 3D models for either porous medium or open medium approaches;
 - local instrumentation for void fraction, interfacial area, bubble and droplet size, phase velocities, turbulence scales, mean and fluctuating temperature field, mean and fluctuating pressure, non-condensable gas fraction, wall friction, wall heat flux (this may include optical probes, conductivity or capacity probes, film probes, Wire Mesh Sensors, hot wire or hot film anemometry, steady and transient X-ray or Gamma tomography, absorption and scattering methods, Laser Doppler Anemometry, Particle Tracking Velocimetry, Laser Induced Fluorescence, Nuclear Magnetic Resonance, ultrasonic methods, and any other new advanced method);
 - visualization techniques, expert systems, identification of flow regimes in complex geometry (rod bundle, tube bundle, etc.) and/or in high pressure and high temperature conditions;
 - use of simulant fluids with well-established similarity laws;
 - any new experimental technique;
 - industrially applicable instrumentation.
- The Workshop will also address quality- and qualification-related aspects, such as:
 - current code validation requirements;
 - test design requirements for code validation (e.g. pressure losses, scaling issues, etc.);
 - specific requirements for CMFD-grade experiments and related measurements for single- and multi-phase flows;
 - criteria for quality of data (e.g. measurement uncertainty assessment);
 - experimental data handling issues.
- The Workshop should help to identify the current gaps between the (modelling and code qualification) needs and the available technology, and the margins for future advancements.

About SILENCE

SILENCE is a Network for cooperation among teams of experimentalists managing significant experimental projects in nuclear reactor thermal-hydraulics (TH). The idea was launched in 2012 by Prof. Francesco D’Auria of University of Pisa – San Piero a Grado Nuclear Research Group (GRNSPG); the following Organizations, all active in large scale TH experimentation, have joined the initiative: AREVA GmbH (Germany); Helmholtz Zentrum Dresden-Rossendorf, HZDR (Germany); Korean Atomic Energy Research Institute, KAERI (Republic of Korea); MTA-EK (Hungary); Oregon State University, OSU (U.S.A.); Paul Scherrer Institut, PSI (Switzerland); University of Lappeenranta, LUT (Finland). The GRNSPG is also part of the Network, as the Host Organization.

Keynote Speakers

Three keynote speakers will be invited to give a talk at the beginning of each daily session.

The names of the invited speakers will be announced at a later stage.

Scientific Committee

- Nusret Aksan, GRNSPG-UNIFI
- Dominique Bestion, CEA (WS Chairman)
- In-Cheol Chu, KAERI
- Francesco D’Auria, GRNSPG-UNIFI
- Attila Guba, MTA-EK
- Uwe Hampel, HZDR
- Fabio Moretti, GRNSPG-UNIFI & NINE
- Domenico Paladino, PSI
- Horst-Michael Prasser, ETH Zürich & PSI
- Heikki Purhonen, LUT
- Klaus Umminger, AREVA GmbH
- Qiao Wu, OSU
- (Others to be appointed)

Local Organizing Committee

- Fabio Moretti, N.I.N.E. and GRNSPG-UNIFI (f.moretti@nineeng.com)
- Sergii Lutsanych, GRNSPG-UNIFI (s.lutsanych@ing.unipi.it)
- Valeria Venturini, N.I.N.E. (v.venturini@nineeng.com)

Dates and Deadlines

Extended abstracts due	June 30, 2015 July 31, 2015
Notification of abstract acceptance	August 15, 2015 September 15, 2015
Draft full-length paper due	November 15, 2015
Notification of paper acceptance + comments	December 31, 2015
Final paper due	February 15, 2016
Early registration	15 March 2016
Late registration	14 June 2016
Last-minute registration at the Workshop	15-17 June 2016

Registration Fees

Early registration fee (if paid before March 15, 2016)	500 €
Late registration fee (if paid after March 15, 2016, and before the WS start)	600 €
Last-minute registration fee (on-the-spot)	700 €

For further information please check the website (<http://grnspg.ing.unipi.it/swinth/>) or contact the local organizing committee by e-mail.

Instructions to Authors

The Authors are invited to submit their **extended abstracts** before **July 31st, 2015**, via e-mail to Fabio Moretti (f.moretti@nineeng.com) and to the Workshop Chair (Dominique.bestion@cea.fr), with copy to Mrs. Valeria Venturini (v.venturini@nineeng.com). For editing consistency reasons, it is recommended that the abstract is written by Microsoft Word following the format described below.

TITLE OF THE PAPER (Left aligned; Calibri; Upper case; 14 points; Bold)

(one line space)

First A. Author¹, Second B. Author² and Third C. Author³ (Left aligned; Calibri; Lower case; 11 points; Bold)

(one line space)

^{1,2} Authors' Department, Institute, COUNTRY.

(E-mail: firstauthor@aaaa.bbb, secondauthor@aaaa.bbb)

³ Author's Department, Institute, COUNTRY.

(E-mail: thirdauthor@aaaa.bbb)

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EXTENDED ABSTRACT (Left aligned; Calibri; Upper case; 11 points; Bold)

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The text of the extended abstract (Left and Right justified, Calibri, 11 points, single spaced) should provide a synthetic and clear description of the work to be presented, including essential information such as: background, aim and scope of the work; adopted methods and techniques; elements of novelty; main achievements and conclusions.

The number of words should preferably be in the range 400 to 600. Figures are allowed, but should be limited to one or two. No equations and no tables should be included, unless absolutely necessary.

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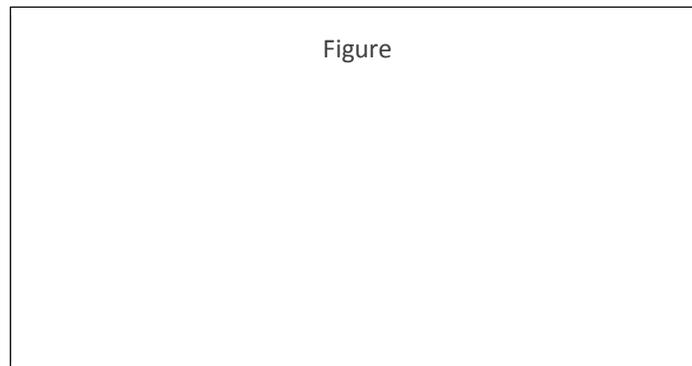


Figure 1. (Calibri; Lower case; 10 points; Bold; Italic) *Figure caption (Calibri; Lower case; 10 points; Italic)*

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KEYWORDS: (Calibri; Upper case; 11 points; Bold) Up to 6 keywords arranged in alphabetical order (Left and Right justified; Calibri; Upper case; 11 points; Bold)

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ACKNOWLEDGEMENTS: (Calibri; Upper case; 11 points; Bold) Authors' expressions of appreciation for... (Left and Right justified; Calibri; Lower case; 11 points)