

**NORTH CAROLINA STATE UNIVERSITY, DEPT. OF NUCLEAR ENGINEERING**  
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Prepared for LLNL under Standard Research Subcontract No. B606928

**NCSU**  
**FOREIGN TRIP REPORT**

**DATE:** October 24, 2014

**SUBJECT:** Report of Foreign Travel to Kyoto, Japan

**TO:** Dr. Jerry N. McKamy, USDOE Nuclear Criticality Safety Program Manager, National Nuclear Security Administration, NA-00-10

**FROM:** Ayman Hawari, Professor and Director, Nuclear Reactor Program, Department of Nuclear Engineering, North Carolina State University

**MEETING TITLE:**

PHYSOR 2014: The Role of Reactor Physics Towards a Sustainable Future

**MEETING LOCATION:**

Westin Miyako Kyoto Hotel, Kyoto, Japan

**MEETING DATES:**

September 28 to October 3, 2014

**ATTENDEES ON BEHALF OF NCSP:**

Ayman Hawari, North Carolina State University

**MEETING BENEFITS TO NCSP:**

During this meeting I presented a paper in the “Nuclear Data” track on the use of the pulsed neutron slowing-down-time technique for benchmarking  $S(\alpha,\beta)$  nuclear data libraries.  $S(\alpha,\beta)$  data is currently a focus area of NCSP. In this paper, it was demonstrated that this method can access readily the thermal energy range and reveal deviations between measurements and calculations. In addition, I attended presentations in the criticality safety and the nuclear data tracks. In the criticality safety track, the topics covered included discussions of international databases for nuclear fuel isotopics, criticality safety assessment for fuel storage and transportation, and OECD code validation activities. In the nuclear data track, the topics covered included assessment of nuclear data uncertainties, fundamental data related to the thermal and fast, neutron thermalization and data library generation.

## **MEETING PURPOSE:**

The PHYSOR conference is the ANS topical meeting in the field of reactor physics. It represents a premier international nuclear science and engineering event. Over the years, this conference has evolved to be very broad and diverse. PHYSOR 2014 covered many tracks that include

- 1) Reactor Analysis Methods
- 2) Deterministic Transport Theory
- 3) Monte Carlo Methods
- 4) Verification, Validation and Uncertainty Analysis
- 5) Nuclear Criticality Safety
- 6) Reactor Physics Experiments
- 7) Reactor Concepts and Design
- 8) Reactor Operation and Safety
- 9) Transient and Safety Analysis
- 10) Nuclear Data
- 11) Research Reactors and Spallation Sources
- 12) Fuel Cycle and Actinide Management
- 13) Radiation Applications and Nuclear Safeguards
- 14) Education in Reactor Physics
- 15) Research related to Fukushima Accident

In this conference I presented two papers related to nuclear data (i.e.,  $S(\alpha,\beta)$ ) and reactor benchmarks. I was also a co-author on a third paper related to a proposed small modular reactor (SMR) concept.

The papers are listed in the attached meeting abstract book.

## **MEETING GOVERNANCE:**

PHYSOR 2014 was organized and hosted by the Japanese nuclear engineering community including JAEA, and several Japanese universities and industrial partners.

In the conference it was announced that the next PHYSOR meeting will take place May 1<sup>st</sup> – 5<sup>th</sup> 2016 in Sun Valley, Idaho. I serve on the TPC and as a track leader for PHYSOR 2016.

## **OTHER MEETINGS:**

No other meetings were attended.

## **ATTACHMENTS:**

- Summary slides on nuclear data and criticality safety needs
- IAEA nuclear data presentation
- Detailed information about PHYSOR 2014 including its program and abstract book can be found at <http://rpg.jaea.go.jp/physor2014/>

Full papers can be provided upon request.