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**RPI  
FOREIGN TRIP REPORT  
WINS20141220**

**DATE:** December 20, 2014

**SUBJECT:** Report of Foreign Travel to Dresden, Germany– Yaron Danon, RPI.

**TO:** Jerry N. McKamy, Director, Office of Environment, Safety, and Health, National Nuclear Security Administration / NA-00-10/GTN, 1000 Independence Ave., SW, Washington, DC 20585-1290

**FROM:** Yaron Danon, Rensselaer Polytechnic Institute, Troy, NY 12180

**MEETING TITLE:** Workshop on Elastic and Inelastic Neutron Scattering

**MEETING LOCATION:** Helmholtz-Zentrum Dresden-Rossendorf, Bautzner Landstrasse 400, 01328 Dresden, Germany

**MEETING DATES:** December 3-5, 2014

**ATTENDEES ON BEHALF OF NCSP:** Yaron Danon

**MEETING BENEFITS TO NCSP:**

The objective of the meeting was to discuss the latest progress on fast neutron scattering in the energy range applicable to critical systems. Improvement in the treatment of neutron scattering cross section and angular distribution leads to improvement in calculations of critical systems. Inelastic scattering and neutron angular distribution have large uncertainty and methods for improvement were discussed.

**MEETING PURPOSE:**

The meeting was focused on the experimental and theoretical activities in the field of neutron elastic and inelastic scattering in the fast energy range. The meeting brought together prominent

researchers in the fields of experiment, theory and data evaluation to exchange ideas, identify areas of cooperation, and to discuss plans for the future.

**SITES VISITED:**

Helmholtz-Zentrum Dresden-Rossendorf, Bautzner Landstrasse 400, 01328 Dresden, Germany

**ABSTRACT:**

The traveler participated in a Workshop on Elastic and Inelastic Neutron Scattering (WINS) that was held in Helmholtz-Zentrum Dresden, Germany. The meeting was focused on the experimental and theoretical activities in the field of neutron elastic and inelastic scattering in the fast energy range. The meeting brought together prominent researchers in the fields of experiment, theory and data evaluation to exchange ideas, identify areas of cooperation, and to discuss plans for the future. The group from RPI presented results on U-238 and Fe fast neutron scattering and angular distribution measurements.

**Access to the information in this report is limited to those indicated  
on the distribution list and to U.S. Government Agencies and their Contractors.**

**REPORT OF FOREIGN TRAVEL**

**Yaron Danon  
NEA Headquarters, Issy-les-Moulineaux, France  
December 3-5, 2014**

**PURPOSE OF TRAVEL**

The purpose of the travel was to participate in a Workshop on Elastic and Inelastic Neutron Scattering (WINS) that was held in Helmholtz-Zentrum Dresden, Germany. The participant's group presented "Measurement of Iron and  $^{238}\text{U}$  Neutron Scattering as a Benchmark for Nuclear Data Evaluations"

**REPORT**

This was the 3<sup>rd</sup> WINS meeting; the RPI group also participated in the 2<sup>nd</sup> meeting. This topic is of special interest to the RPI group which is measuring fast neutron scattering at the Gaertner LINAC center at RPI. The RPI group that traveled to this meeting included the participant, his graduate student Adam Daskalakis (NR funded) and Greg Leinweber (NR funded). A presentation was given by Adam Daskalakis that discuss fast neutron scattering measurements from U-238 and Fe target. These measurements and the data analysis provide a new method to benchmark and improve evaluations and were well received in the international Nuclear Data community.

The RPI work on U-238 neutron scattering is in collaboration with evaluators from IAEA (A. Trkov and R. Capote); A. Trkov also attended the meeting and we had an opportunity for side collaboration discussions.

We were very interested to learn about the capabilities at Helmholtz-Zentrum Dresden where they use an accelerator with very short pulse and high intensity to perform fast neutron scattering measurements. The meeting included a tour of this facility.

Researchers at IRMM at Geel are also working on development of capabilities to measure neutron scattering and angular distributions that are similar to the RPI system.

This interaction prompted us to consider extension of the method to lower energy neutron (keV region).

## Meeting participants

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## **Itinerary**

12/1/15 - 12/2/15	Travel from Albany NY to Dresden Germany
12/3/15 - 12/5/15	WINS 2015
12/6/15	Personal day in Dresden
12/7/15	Travel from Dresden Germany to Albany, NY

## **DISTRIBUTION**

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