

Proceedings

Fourth Annual ISU Workshop on Accelerator-Driven Subcritical Systems Experiments

Introduction

The Idaho Accelerator Center of the Idaho State University organized a fourth annual Workshop on Accelerator-Driven Subcritical System (ADSS) Experiments. The workshop was held April 11-14, 2006 at Texas A&M University. In this unique workshop nuclear engineering and physics faculty and research scientists from Idaho State University, Texas A&M University, University of Texas at Austin, University of Nevada, Las Vegas, and University of Michigan met with scientists and engineers from Los Alamos and Argonne National Laboratories as well as many international participants. The international participants represented the ECATS project (Experiment on the Coupling of an Accelerator, a spallation Target and a Sub-critical blanket, a component of EUROTRANS). They discussed the use of accelerators in nuclear experiments for the Advanced Fuel Cycle Initiative (AFCI) of the U.S. Department of Energy (DOE) as well as for European programs. This is the only DOE-sponsored workshop on the coupling of neutron-generating accelerator systems and subcritical nuclear assemblies or reactors.

The workshop included presentations on the latest results and status of U.S. and international ADSS experiments, including the AFCI Reactor Accelerator Coupling Experiments (RACE) Project and potential future RACE experiments for ECATS. The RACE Project is a series of ongoing and future experiments to determine the performance of subcritical driven nuclear reactor systems. At ISU and UT-Austin the driving source used gamma-n reactions produced by ISU's electron accelerators. RACE-ECATS experiments may include much higher accelerator power and associated fission power. The ultimate goal of these experiments is to develop the ability to model and control large, high-power ADSS coupled to high-energy proton accelerators.

The goal of the Workshop was to address practical issues, such as operating conditions and nuclear instrumentation, in current and planned U.S. experiments. In addition, these workshops foster closer collaborations between national labs, international collaborators, and academia. Participants discussed work at their respective facilities, shared new ideas and future opportunities, and discussed plans and potential collaborations. These collaborations were further developed at a RACE-ECATS Planning meeting held on April 11 at Texas A&M with continued discussions throughout the workshop and social gatherings.

These proceedings include all view graph presentations contributed by the authors. We thank them for their participation and contributions to this important work. We would also like to acknowledge the support of the DOE AFCI Program and EUROTRANS.

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