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Title: Nuclear Security and Nonproliferation Research in the Applied Nuclear Science Group at the University of Michigan

Abstract:

The Applied Nuclear Science Group (ANSG) at the University of Michigan conducts research in ionizing radiation detection and optical science for nuclear security, nonproliferation, nuclear energy, and basic scientific research. ANSG manages the Michigan's Neutron Science Laboratory and makes an extensive use of the Gérard Mourou Center for Ultrafast Optical Science. This talk will provide an overview of the major current and recent research activities in the group, including novel radiation detector development, new active interrogation probes and techniques, antineutrino detection for monitoring of nuclear reactors, radiation effects in materials, and the use of intense laser-matter interactions and plasmas for remote nuclear material detection. ANSG is a member of the WATCHMAN scientific collaboration and participates in a vibrant US-UK initiative to develop the Advanced Instrumentation Testbed, the goal of which is to demonstrate the use of large water-based antineutrino detectors for remote monitoring and discovery of nuclear reactors. The group is also involved in the design, construction, and operation of ZEUS at the University of Michigan, the most powerful laser in the U.S. that will open new opportunities in laser-based radiation sources and nuclear photonics, and is interfaced to similar facilities in the UK.