ICANS XX,
20th meeting on Collaboration of Advanced Neutron Sources
March 4 – 9, 2012
Bariloche, Argentina

MaRIE: The Future for Nuclear and Extreme Matter Research at Los Alamos

Kurt Schoenberg

Los Alamos National Laboratory

kurts@lanl.gov

Abstract

MaRIE (Matter-Radiation Interactions in Extremes) is the future Los Alamos signature facility that is based on an evolution of the present Los Alamos Neutron Science Center (LANSCE). MaRIE will build on the accelerator infrastructure currently at Los Alamos to create and study matter under extreme radiation conditions. The evolution of materials research drives toward a new era that will focus on the ability to manipulate and control materials on scales from atomic to the continuum. MaRIE will address that frontier by providing unique capabilities in matter-radiation interactions and extreme environments to enable future materials-centric science and discovery. MaRIE will include a comprehensive set of co-located tools to realize transformational advances in materials behavior, response, and fabrication. It will enable dynamic probing of material on previously inaccessible time and length scales, will provide intense neutron and photon radiation environments, and will provide the ability to characterize and synthesize new materials. The Marie project is presently in conceptual design and will be proposed to the US Department of Energy for construction. An overview of MaRIE, with an emphasis on neutron environments and science, will be presented.