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Fundamental Neutron Physics at NIST

MUHAMMAD ARIF, NIST

The program in fundamental neutron physics at the National Institute of Standards and Technology (NIST) began nearly two decades ago. Currently, five neutron beam lines are dedicated to studies of fundamental neutron interactions. The neutrons are provided by the NIST Center for Neutron Research (NCNR), a national user facility for studies that include condensed matter physics, materials science, nuclear chemistry, and biological science. The beam lines for fundamental neutron physics experiments include a high intensity polychromatic beam, three monochromatic beams (0.496 nm, 0.89 nm, and .384 nm), and a neutron interferometer and optics facility (0.2 nm – 0.49 nm). The presentation will discuss the broad program in fundamental neutron physics with a brief description of some of the experiments performed at the NCNR. In addition, the status of the new guide expansion project that includes a new neutron guide that will provide an additional very high intensity polychromatic beam for fundamental physics research will be presented.