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Proton Radiography at FAIR FRANK MERRILL, LANL, ALEXANDER GOLUBEV, VLADMIR TURTIKOV, ITEP, DMITRY VARENTSOV, GSI, PRIOR COLLABORATION — Proton radiography was invented in the 1990's at Los Alamos National Laboratory as a diagnostic to study dynamic material properties under extreme pressures, strain and strain rate. Since this time a proton radiography facility has been commissioned at the Institute for Theoretical and Experimental Physics (ITEP) in Russia. Recently an international collaboration was formed to develop a new proton radiography capability for the study of dynamic material properties at the Facility for Anti-proton and Ion Research (FAIR) located at Gesellschaft für Schwerionenforschung (GSI) in Darmstadt, Germany. This new PRoton radIOgraphy facility at FAIR (PRIOR) will provide radiographic imaging of dynamic systems with unprecedented spatial, temporal and density resolution, resulting in a fundamental understanding of dynamic material properties at new length scales. These dynamic experiments will be driven with many energy sources including heavy ions, high explosives, guns and lasers. The capabilities of this new facility will be presented through a description of the first set of planned experiments.

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