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High-field pulsed magnet instruments for x-ray studies of materials at the Advanced Photon Source[1] ZAHIRUL ISLAM, Argonne National Laboratory (ANL), J.P.C. RUFF, McMaster University, Y. MATSUDA, ISSP, University of Tokyo, Z. QU, Tulane University, H. NOJIRI, Tohoku University, B.D. GAULIN, McMaster University, S. YOSHII, Tohoku University, Z. MAO, Tulane University, J.C. LANG, ANL — High-field pulsed magnets are not the solution to x-ray studies of all problems requiring high magnetic fields, but, they are the only solution to many. We present a very high-field pulsed magnet system for x-ray studies of materials at the Advanced Photon Source (APS). The high-field instruments for x-ray studies are unique in the United States. Currently, 30 Tesla split-coil and long-pulse solenoid magnets are in use for scattering and spectroscopic experiments, respectively. The coils are made of CuAg wires. Pulsed fields (1-10 ms in duration) are generated using a configurable bipolar capacitor bank (40 kJ). For scattering studies split coils are mounted on the cold finger of a closed-cycle He cryostat capable of a repetition rate of ∼10-20 minutes for peak fields in the range of 20-30 Tesla. Time-resolved scattering data are typically collected using a fast APD detector. Initial scattering studies of a geometrically frustrated magnet will be presented.

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Zahirul Islam
Argonne National Laboratory

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