

Abstract Submitted
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A new high magnetic field capability at the NHMFL at Los Alamos National Laboratory: 300 tesla Single Turn System¹ CHARLES MIELKE, Los Alamos National Laboratory, JOSEPH SCHILLIG, JOSE ERNIE SERNA, DARRYL A. ROYBAL, MICHAEL PACHECO, JAMES R. SIMS, JOHN SINGLETON — We report on the development of a unique system designed to study actinide materials in ultra-high magnetic fields. The energy scales of much of the interesting physics in *f*-electron materials in particular the actinides, demand ultra-high magnetic fields to adequately perturb interactions. We have developed an apparatus to generate magnetic fields approaching 300 tesla; while leaving the hazardous sample intact. The single turn system design is based on a brute force technique to drive a very large electrical current (up to ~ 3.8 MA) through a simple solenoid before it vaporizes and explodes. Such systems have been pioneered by Herlach and Miura and have proven to be an effective condensed matter research tool. In each shot Lorentz forces and Joule heating destroy the coil, while the sample is untouched, thus allowing for multiple field traces on a single specimen. A distinctive feature of the Los Alamos system is the ability to safely study actinide specimens, this and other design features will be presented as well as experimental data.

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