Abstract Submitted
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High pressure, high magnetic field dilatometry experiment applied to strongly correlated electron systems[1] AUDREY GROCKOWIAK, DAVID GRAF, WILLIAM CONIGLIO, JU-HYUN PARK, TIMOTHY MURPHY, SCOTT HANNAHS, STANLEY TOZER, NHMFL-Florida State University — Standard dilatometry techniques including capacitance measurements [1] have been developed and used for low temperature and high magnetic field measurements, but do not permit the use of high pressures. Following the experimental development of [2], we present a setup coupling Fiber Bragg Gratings (FBG) with pressure cells to map the whole magnetic field-pressure-temperature phase space of various systems as actinides and pnictides. FBG dilatometry measurements permit to achieve a resolution of $\Delta L/L \approx 3.10^{-7}$ making it the most sensitive dilatometry technique. "Mini-me" piston cylinder cells developed at the NHMFL permit us to reach a pressure of 3 GPa, and their compact size allows them to be used in highly constrained sample volume of a portable dilution refrigerator, giving us the ability to do high pressure dilatometry studies in any high magnetic field facility at temperatures as low as 25 mK. We will present the setup along with preliminary results obtained on diverse test samples.

[1] Schmiedeshoff, G., Review of Scientifc Instruments, 77(12) (2006)
[2] Daou, R., Review of Scientific Instruments, 81(3) (2010)

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