Abstract Submitted
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Magnetism, superconductivity, and the volume collapse transition in ($Ca_{0.67}Sr_{0.33}$)Fe_2As_2 under pressure[1] JASON JEFFRIES, N.P. BUTCH, Lawrence Livermore National Laboratory, S.R. SAHA, K. KIRSHENBAUM, University of Maryland, S.T. WEIR, Lawrence Livermore National Laboratory, Y.K. VOHRA, University of Alabama, Birmingham, J. PAGLIONE, University of Maryland — The alkaline earth site of $CaFe_2As_2$ can be chemically substituted with Sr, forming a homogeneous solid solution series ending with $SrFe_2As_2$. It is found that ($Ca_{0.67}Sr_{0.33}$)Fe_2As_2 exhibits a pressure-temperature phase diagram intermediate between the two end members of the series, shifting the phase lines for the suppression of magnetism, the development of superconductivity, and the occurrence of a volume collapse transition to higher pressures. The overall shift in the pressure-temperature phase diagram permits the study of each phase field, yielding valuable information about the correlations between local atomic structure, magnetism, superconductivity, and the volume collapse transition. Lawrence Livermore National Laboratory is operated by Lawrence Livermore National Security, LLC, for the U.S. Department of Energy, National Nuclear Security Administration under Contract DE-AC52-07NA27344.

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