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High Pressure Low Temperature Studies of the Iron-Based Superconductor $SrFe_2As_2$ GARY CHESNUT, University of West Georgia, WALTER UHOYA, JEFFREY MONTGOMERY, University of Alabama at Birmingham, ANTONIO DOS SANTOS, JAMIE MOLAISON, Oak Ridge National Laboratory
— Iron-based superconductors are a critical clue in understanding the mechanism behind high temperature superconductivity. It is well-known that superconductivity is highly influenced by magnetic fields. Recent neutron scattering experiments were performed on $SrFe_2As_2$ to examine the nuclear and magnetic structure to a temperature of 89 K and a pressure of 4.3 GPa. The structural phase transition from tetragonal to orthorhombic was observed at $T_o = 196$ K with an increase in orthorhombic distortion with decreasing temperature. The neutron diffraction experiments revealed subtle, but interesting results at elevated pressures.

Gary Chesnut
University of West Georgia

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