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Pressure-induced superconducting state of CaFe_2As_2 from an antiferromagnetic spin-density-wave state HANO H LEE, EUNSUNG PARK, TUSON PARK, F. RONNING, E.D. BAUER, J.D. THOMPSON, Los Alamos National Laboratory — The spin-density-wave (SDW) antiferromagnet CaFe_2As_2 has been reported as superconducting under pressure. By measuring electrical resistivity and magnetic susceptibility under pressure in silicon fluid as a pressure medium, we show that bulk superconductivity is present in a narrow pressure range where orthogonal and collapsed tetragonal state coexist. At higher pressures, where the collapsed tetragonal structure is proposed, distinctive behavior appears in resistivity with strong thermal and pressure hysteresis. Magnetic fluctuations combined with structural instability appear to be important for superconductivity.

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