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Anisotropic behavior in CaFe2As2 under uniaxial pressure MILES FRAMPTON, Univ of California - Davis — For many years, magnetism was believed to destroy superconductivity. However, the recently discovered Iron-based superconductors seem to require magnetism in order to turn superconducting. We study CaFe2As2, an Iron-based superconductor. With optimal doping, superconducting transition temperatures (Tc) have been observed in this compound up to 38K. Studying CaFe2As2 will hopefully shed light on why superconductivity exists in all the Iron-based superconductors. CaFe2As2 has a complicated phase diagram, and we study a specific structural/magnetic transition in CaFe2As2 around 170K under uniaxial pressure in multiple directions. It is believed this transition is strongly tied to superconductivity. Uniaxial pressure is applying pressure in a single direction while leaving the other directions free. Applying uniaxial pressure is useful in this compound because it has anisotropic behavior in magnetism and resistivity. CaFe2As2 grows naturally in flat platelets. Applying pressure perpendicular to the platelet face is easy. Applying pressure parallel to the platelet face is challenging. We would like to present resistivity data of the 170K transition under uniaxial pressure both parallel and perpendicular to the platelet faces.

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