

Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

Elastic properties of the Mott transition system $\text{Ca}_{2-x}\text{Sr}_x\text{RuO}_4$.¹

VEERLE KEPPENS, YANBING LUAN, SRIPARNA BHATTACHARYA, The University of Tennessee, RONGYING JIN, DAVID MANDRUS, Oak Ridge National Laboratory — Layered perovskite ruthenates have attracted considerable interest since the discovery of superconductivity in Sr_2RuO_4 , which remains the only copper-free superconductor isostructural to the cuprates. Among the doped varieties of Sr_2RuO_4 , the $\text{Ca}_{2-x}\text{Sr}_x\text{RuO}_4$ series is heavily studied, as it connects the Mott insulator Ca_2RuO_4 with the superconductor Sr_2RuO_4 and exhibits a variety of physical properties. The current work focuses on the elastic properties of $\text{Ca}_{2-x}\text{Sr}_x\text{RuO}_4$. Resonant Ultrasound Spectroscopy (RUS) has been used to measure the resonant frequencies of the samples, which are directly related to the elastic moduli, and results are presented for single crystal samples with $x = 0.5, 1.9$ and 2.0 . The temperature-dependence of the frequencies is found to be quite unusual and reflects the rich phase diagram that sets these materials apart.

¹work supported by NSF-DMR grant 0506292.

Veerle Keppens
The University of Tennessee

Date submitted: 30 Nov 2006

Electronic form version 1.4