Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Microwave imaging of charge-ordered phase coexistence in a layered manganite ERIC YUE MA, Stanford University, BEN BRYANT, University College London, Delft University of Technology, YUSUKE TOKUNAGA, RIKEN, ZHI-XUN SHEN, Stanford University — Microwave impedance microscopy has been used to probe the co-existence of two charge- and orbital-ordered phases with slightly different in-plane conductivity in the layered manganite $Pr(Sr_{0.1}Ca_{0.9})Mn_2O_7$. Hysteretic, spatially inhomogeneous transitions between 1) the two charge-ordered phases and 2) the charge-ordered and disordered phases are observed, in which the transition temperature is affected by local strain induced by the presence of microscopic structural twin domains. In addition, conductivity contrast features are observed in the higher temperature, anti-ferroelectric charge ordered phase, which may represent anti-ferroelectric domain walls.

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Date submitted: 13 Nov 2013 Electronic form version 1.4