Abstract Submitted
for the MAR05 Meeting of
The American Physical Society

Continuous-Wave Measurement of the Upward-Going Temperature Wave in the Helium-4 Self-Organized-Critical State Near the Lambda Transition R.V. DUNCAN, S.T.P. BOYD, D.A. SERGATSKOV, University of New Mexico — We describe the first continuous-wave (CW) measurements of the upward-going temperature wave in the self-organized-critical (SOC) state which forms in ^{4}He under conditions of downward heat flow near T_λ under gravity. The CW technique permits measurements with extremely low (< 1 nK) excitation amplitudes, allows continuous measurement of the wave velocity as the SOC state grows, and has yielded the first quantitative measurements of the attenuation. The measured attenuation disagrees with predictions, and this new technique may help address the question of whether the SOC state is occurring in the helium-I or helium-II state. Some intriguing new qualitative features are also described.

Robert Duncan
University of New Mexico

Date submitted: 04 Dec 2004 Electronic form version 1.4