Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Quasistatic flows near jamming: The role of inertia and dissipation CRAIG MALONEY, Carnegie Mellon University, Department of Civil and Environmental Engineering, PETER TROCHA, Carnegie Mellon Univeristy, Department of Civil and Environmental Engineering — We perform massively parallel computer simulations of granular particles at fixed shearing rate and density near the onset of jamming. The microscopic dynamical model contains two types of damping; one which damps the *absolute* motion of a particle with respect to a homogeneously shearing background (as in SLLOD type approaches) and another which damps the *relative* motion of a particle with respect to its near-neighbors (as in discrete element approaches). We study how the damping mechanism and its strength affects the collective particle dynamics through the statistics of local particle displacements and local strains. In particular, we show that for strong, *absolute* damping, the single particle displacement statistics can be similar for systems at different distances from jamming while the short-time plastic activity can vary dramatically.

Craig Maloney
Carnegie Mellon Univeristy, Dept of Civil and Environmental Engineering

Date submitted: 21 Nov 2010 Electronic form version 1.4