

**Meeting:** 1001, Evanston, Illinois, SS 6A, Special Session on Nonlinear Partial Differential Equations and Applications

1001-35-400      **John K Hunter\*** (jkhunter@ucdavis.edu), Department of Mathematics, University of California at Davis, Davis, CA 95616. *Nonlinear hyperbolic surface waves.*

The failure of the uniform Lopatinski condition in half-space or interface problems for hyperbolic system of conservation laws is typically associated with the presence of surface waves. A satisfactory general theory of such problems is currently lacking. As a first step in understanding their properties, we will describe the derivation of nonlocal asymptotic equations for weakly nonlinear surface waves, with applications to nonlinear elasticity and contact discontinuities in magnetohydrodynamics. We will present numerical solutions of the asymptotic equations showing the formation of singularities in finite time, together with some surprising and puzzling effects of nonlocality. (Received August 31, 2004)