1127-65-267 **Youngjoon Hong*** (hongy@uic.edu), 851 S Morgan St, Chicago, IL 60607, and **Jerry Bona**.

Numerical study of the generalized Korteweg-de Vries equations with oscillating nonlinearities and boundary conditions.

Numerical studies of the supercritical transitional generalized Korteweg-de Vries equations (t-gKdV) posed with periodic boundary conditions and generalized Korteweg-de Vries (gKdV) equations in a finite domain are presented. To begin, we employ a class of the Fourier spectral methods to implement the solution to the initial value problem associated to the supercritical gKdV equations. Considering nonlinear time-oscillating nonlinearities, the blow-up patterns of the numerical solution are analyzed. In the presence of the boundaries and time-oscillating boundary conditions, the supercritical gKdV equations are studied in a finite domain. For numerical experiments, an accurate spectral collocation method and spectral element method are implemented and tested. As the boundary frequency parameter ω increases, we find that the periodic time-oscillating condition can disturb the blow-up solution. We provide numerical evidence that the numerical solutions remain stable with high frequencies on boundary data. This is joint work with Jerry Bona. (Received February 05, 2017)