1116-76-248 **John Carter***, Seattle University, **Alex Govan**, Seattle University, **Diane Henderson**, Penn State University, and **Harvey Segur**, University of Colorado at Boulder. *Frequency downshift in a viscous fluid.*

Frequency downshift, i.e. a shift in the spectral peak to a lower frequency, in a train of nearly monochromatic gravity waves was first reported by Lake *et al.* (1977). Even though it is generally agreed upon that frequency downshifting (FD) is related to the Benjamin-Feir instability and many physical phenomena (including wave breaking and wind) have been proposed as mechanisms for FD, its precise cause remains an open question.

Dias *et al.* (2008) added a viscous correction to the Euler equations and derived the dissipative NLS equation (DNLS). In this talk, we introduce a higher-order generalization of the DNLS equation, which we call the viscous Dysthe equation. We outline the derivation of this new equation and present many of its properties. We establish that it predicts FD in both the spectral mean and spectral peak senses. Finally, we demonstrate that predictions obtained from the viscous Dysthe equation accurately model data from experiments in which frequency downshift occurred. (Received August 18, 2015)