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Vera Mikyoung Hur* (verahur@math.uiuc.edu), 1409 W Green Street, Department of Mathematics, University of Illinois at Urbana-Champaign, Urbana, IL 61801, and **Jared Bronski** and **Nanjundamurthy Venkatasubbu**. *Modulational instability and variational structure*.

I will discuss the modulational stability and instability of periodic traveling-wave solutions to a Hamiltonian PDE with a certain algebraic structure. Examples include Burgers equations with fractional dispersion, such as the KdV and the Benjamin-Ono. Instead of relying on the traditional Evans function based approach, the theory is based on direct spectral perturbation. I will make a connection to the Benjamin-Feir instability of Stokes waves, if time permits. (Received December 13, 2011)