

Abstract Submitted  
for the APR12 Meeting of  
The American Physical Society

**Modeling of Nonlinear Beat Signals of TAE's** BO ZHANG, HERBERT BERK, BORIS BREIZMAN, LINJIN ZHENG, Institute for Fusion Studies, The University of Texas at Austin — Experiments on Alcator C-Mod reveal Toroidal Alfvén Eigenmodes (TAE) together with signals at various beat frequencies, including those at twice the mode frequency. The beat frequencies are sidebands driven by quadratic nonlinear terms in the MHD equations. These nonlinear sidebands have not yet been quantified by any existing codes. We extend the AEGIS code to capture nonlinear effects by treating the nonlinear terms as a driving source in the linear MHD solver. Our goal is to compute the spatial structure of the sidebands for realistic geometry and q-profile, which can be directly compared with experiment in order to interpret the phase contrast imaging diagnostic measurements and to enable the quantitative determination of the Alfvén wave amplitude in the plasma core

Boris Breizman  
Institute for Fusion Studies, The University of Texas at Austin

Date submitted: 06 Jan 2012

Electronic form version 1.4