

Abstract Submitted
for the DPP05 Meeting of
The American Physical Society

Ad-hoc KEEN-type Waves and their Occasional Resemblance to KdV Waveforms YURIY TYSHETSKIY, TUDOR JOHNSTON, INRS-EMT, BEDROS AFEYAN, Polymath Research Inc — Nonlinear kinetic waves of the KEEN type [1] but constructed with two BGK recipes are tested with 1D Vlasov-Poisson simulation (1DVPS). One is that of Allis [2] as modified by Johnston (unpublished), the other is that of Eliasson and Shukla [3]. Strong kinetic waves survive well, but not weaker ones. The potential wave trains resemble those from the Korteweg-deVries equation. This proves to be natural when charge density variation with electrostatic potential is like a quadratic polynomial. For expositions on the physics of ponderomotively driven KEEN waves, consult presentations by Afeyan and Savchenko, this conference. (Part of this work was performed under the auspices of the U.S. Department of Energy under grant number DE-FG03-NA00059.) [1] B. Afeyan et al., “Kinetic Electrostatic Electron Nonlinear (KEEN) Waves and their interactions driven by the ponderomotive force of crossing laser beams”, Proc. IFSA (Inertial Fusion Sciences and Applications 2003, Monterey, CA), 213, B. Hammel, D. Meyerhofer, J. Meyer-ter-Vehn and H. Azechi, editors, American Nuclear Society, 2004. [2] W.P. Allis, paper 3 (pp.21-42), in “In Honor of Philip M. Morse”, ed. H. Feshbach and K. Ingard, MIT Press (1969). [3] B. Eliasson and P.K. Shukla, Phys. Rev. E 71, 046402 (2005)

Tudor Johnston
INRS-EMT

Date submitted: 02 Aug 2005

Electronic form version 1.4