

Abstract Submitted
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Diagnosing Phase Space coherent structures by the test particle method¹ MATHIEU CHARBONNEAU-LEFORT, BEDROS AFEYAN, Polymath Research Inc. — We examine a number of diagnostics which can be deployed to understand the physical basis of coherent structures in phase space such as KEEN Waves [1,2]. We find that the test particle following method (where the self-consistent field is used as well as approximations thereof to follow a large number of particles) can be quite informative. These so called Lagrangian techniques can be used to build the statistical information crucial to understanding the self organization characteristics of KEEN waves and electron plasma waves. Their properties will be examined including the partition of phase space and modal truncation. We will consider VP and VM code generated data with these phase space diagnostics tools. [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), B. Hammel, D. Meyerhofer, J. Meyer-ter-Vehn and H. Azechi, editors, 213, American Nuclear Society, 2004. [2] B. Afeyan, et al., Dynamically Self-Organized Structures in Vlasov Phase Space: Ponderomotively Driven KEEN Waves, Submitted to PRL, 2008.

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