

Abstract Submitted
for the DPP09 Meeting of
The American Physical Society

Nonlinear Wave Driven Processes in Plasmas ROBERT BINGHAM, R.M.G.M. TRINES, STFC Rutherford Appleton Laboratory, L.O. SILVA, GoLP, J.J. SANTOS, CELIA, Universite, Bordeaux 1-CNRS-CEA, Talence, France, B. BRANDAO, J.T. MENDONCA, GoLP, IST Portugal, P.K. SHUKLA, Institut fur Theoretische Physik IV — Nonlinear wave driven processes in plasmas are normally described by either a monochromatic pump wave that couples to other monochromatic waves, or as a random phase wave coupling to other random phase waves. An alternative approach involves a random or broadband pump coupling to monochromatic and/or coherent structures in plasmas. This approach can be implemented through the wave kinetic model. In this model, the incoming pump wave is described by either a bunch (for coherent waves) or a sea (for random phase waves) of quasi-particles. We will present a generalized statistical theory describing a range of phenomena that include generation of zonal flows from drift mode turbulence, photon acceleration of intense lasers and intense radio waves and photon shocks. Possible applications include a diagnostic of large amplitude plasma waves and studies of zonal flows in planetary atmospheres will also be discussed.

Robert Bingham
STFC Rutherford Appleton Laboratory

Date submitted: 20 Jul 2009

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