

Abstract Submitted
for the DPP08 Meeting of
The American Physical Society

Variational formulation of kinetic-bulk multiple-wave conversion in fusion plasmas¹ A.N. KAUFMAN, UC Berkeley and LBNL, A.J. BRIZARD, Saint Michaels College, E.R. TRACY, William and Mary — We present a variational formulation of a generic multiple-wave conversion process [1] between a kinetic-ion plasma wave, supported by a non-Maxwellian distribution of energetic particles, and one or two plasma waves supported by bulk-ions with Maxwellian distributions. The variational approach yields important conservation laws (e.g., action), that help us understand how rf power is exchanged between the bulk-ion species and the kinetic-ion species. We also discuss the implications of a kinetic-ion plasma wave with negative energy on the multiple-wave conversion process. [1] A.J. Brizard, A.N. Kaufman, and E.R. Tracy, *Recirculation in multiple wave conversions*, to appear in *Physics of Plasmas* (2008).

¹Work supported by U.S. DoE grants Nos. DE-AC03-76SFO098 and DE-FG02-96ER54344 and NSF-DoE under contract No. DE-FG02-06ER54885.

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Date submitted: 16 Jul 2008

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