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Drift waves in finite beta plasmas and the thermoelectric effect CHINGPUI HUNG, ADIL HASSAM, IREAP, University of Maryland — The plasma thermoelectric effect generates a B x grad[T] current in a magnetized plasma and is of the same order as the plasma resistivity limited current in a finite beta plasma. Since drift waves are driven by resistivity, it is of interest to know how thermoelectricity affects drift wave stability and, in turn, how drift wave turbulence would influence the (dissipative) thermoelectric effect. In particular, can current generated from thermoelectricity survive turbulence? We study drift waves in beta $\sim$ O(1) systems (e.g., FRCs). At this level, the sonic and Alfven DWs are strongly coupled. For isothermal perturbations, we find that finite beta is strongly stabilizing. With temperature perturbations, we find a new local instability, which is mediated by the Braginskii thermal force; also heat conductivity and resistivity may be stabilizing and this will be discussed. The nonlocal theory and universality of this mode is under investigation. A finite beta 3D 2-fluid code will be used to investigate these various situations and the ensuing turbulence will be studied.

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