Abstract Submitted
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Electron Temperature Fluctuations Associated with High Temperature Reconnecting Modes* B. BASU, B. COPPI, P. MONTAG, MIT — Experimental observations [1] and theoretical considerations [2] indicate that, in high temperature plasmas, the value of the perpendicular electron thermal conductivity is relatively large and its effects can compete with those of the parallel thermal conductivity in the theory of reconnecting modes. These effects are taken into account in the relevant expression for the electron thermal energy balance equation. Then the equations for high temperature reconnecting modes are derived and solved showing how limited the applicability of the linearized theory of drift tearing modes [3] is to explain current experimental observations. Electrostatic modes that can be excited in the presence of resistivity gradients [4] are also investigated. When the electron drift wave frequency becomes important, no radially localized unstable mode of this kind can be found with or without the combined effects of trapped electrons and weak collisionality. *Sponsored in part by U.S. DOE.

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