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Effect of parallel heat flux in the gyroviscous tensor on tearing mode instability in two-fluid magnetohydrodynamic model[1] ATSUSHI ITO, National Institute for Fusion Science, J.J. RAMOS, PSFC, MIT — Two-fluid magnetohydrodynamic (MHD) models with ion gyroviscous tensor are used to study finite Larmor radius effects on MHD instabilities such as the tearing mode instability. However, the conventional two-fluid models are valid for collisional plasmas. In the fluid moment equations for low collisionality plasmas, the parallel heat flux that arises in the gyroviscous force due to the non-Maxwellian part of the velocity distribution function cannot be neglected [1]. The effect of parallel heat flux in the gyroviscous tensor on the tearing mode instability in low collisionality plasmas is investigated by eigenmode analysis. The linear eigenmode equations for the tearing mode instability including the perturbed parallel heat flux in the gyroviscous tensor are derived from the fluid moment equations and are numerically solved.

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