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Effects of radio frequency fields in the lower hybrid range on temperature gradient driven drift-modes in tokamaks: Momentum and impurity transport SALIL DAS, Prince Georges Community College, HOGUN JHANG, R. SINGH, National Fusion Research Institute (NFRI), H. NORDMAN, Chalmers University of Technology — The significant effect of impurities in radiation losses and plasma dilution, which result in lower fusion power, and the evaluation of the important effects of intrinsic rotation on transport barrier formation, determination of momentum pinch velocity and its theoretical basis, in tokamak performance is studied using the four-wave parametric process using an electrostatic, collisionless fluid model for ion-temperature-gradient and trapped-electron mode driven turbulence in the presence of radio frequency fields in the lower hybrid (LH) range of frequencies. The beating of the pump and the sidebands exert a ponderomotive force on electrons, modifying the eigenfrequency of the drift waves and influencing the growth rates and the turbulent transport properties. Explicit expressions for the non-linear growth rate and the associated ion thermal conductivity and effective impurity diffusivity are derived. The effects of the rf fields on the momentum and impurity transport coefficients are evaluated for key parameters like rf power, temperature gradients, and magnetic shear.

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