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Linear Ion Temperature Gradient Driven Drift Modes in a Reversed Field Pinch Plasma VARUN TANGRI, PAUL TERRY, University of Wisconsin-Madison, R.E. WALTZ — In Reversed Field Pinch (RFP) plasmas, tearing modes are usually considered responsible for global confinement losses. However, recently improved confinement has been observed when tearing modes are suppressed through current profile control. Although diffusivity has improved, it still exceeds classical and neoclassical estimates. The new mechanism is poorly understood but believed to be associated with smaller scale instabilities, and estimates of diffusivities are lower than observations. In such discharges, it is plausible that short scale ITG may play a significant role in particle and heat confinement. In this work, we examine the linear stability of the ion temperature gradient mode in the RFP geometry. We use a new, simple equilibrium (zero beta, concentric circle) model for RFP machines, which is similar to the well-known s-alpha model. Using the code GYRO in a collsionless limit, linear gyrokinetic simulations in real toriodal RFP geometry have been performed. We also make comparisons with simple calculations and potential relevance of the slab and toroidal branches is also analyzed.

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