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Intrinsic toroidal rotation drive by electromagnetic turbulence in high pressure pedestal plasmas[1] SHUITAO PENG, LU WANG, Huazhong University of Science and Technology — Intrinsic rotation has long been of interest to researchers in magnetic fusion plasmas field since it may be helpful to suppress micro-turbulence and to stabilize RWMs in ITER, where neutral beam injection (NBI) is of low efficiency and high cost. Kinetic ballooning mode (KBM) can be the dominant electromagnetic instability in pedestal region from GTC simulation [1]. In DIII-D, the high frequency coherent (HFC) modes observed in high pedestal pressure Quiescent H-mode (QH-mode) plasmas may be relevant to KBM as well [2]. We analytically derive the toroidal rotation velocity equation by using electromagnetic gyrokinetic theory in toroidal geometry. Intrinsic rotation drive includes the usual residual stress, cross Maxwell stress, kinetic stress [3] and turbulent acceleration [4, 5]. Quasilinear estimates for these terms in KBM turbulence are presented, and electromagnetic effects on intrinsic toroidal rotation drive are also discussed. [1] I. Holod, D. Fulton and Z. Lin, Nucl. Fusion 55, 093020 (2015). [2] Z. Yan *et al.*, Phys. Rev. Lett. **107**, 055004 (2011). [3] W. X. Ding *et al.*, Phys. Rev. Lett. **110**, 065008 (2013). [4] Lu Wang and P. H. Diamond , Phys. Rev. Lett. **110**, 265006 (2013). [5] Lu Wang, Shuitao Peng and P. H. Diamond, Phys. Plasmas **23**, 042309 (2016).

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