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Wall mode stabilization at slow plasma rotation BO HU, RICCARDO BETTI, University of Rochester, HOLGER REIMERDES, ANDREA GAROFALO, General Atomics, JANARDHAN MANICKAM, Princeton University — Unstable pressure-driven external kink modes, which become slowly growing resistive wall modes (RWMs) in the presence of a resistive wall, can lead to tokamak plasma disruptions at high beta. It has been shown that RWMs are stabilized by fast plasma rotation (about 1-2% of the Alfvén frequency) in experiments. Conventional theories attribute the RWM suppression to the dissipation induced by the resonances between plasma rotation and ion bounce/transit or shear Alfvén frequencies [1]. In those theories, the kinetic effects associated with the plasma diamagnetic frequencies and trapped-particle precession drift frequencies are neglected. It has been observed in recent experiments [2,3] that the RWM suppression also occurs at very slow plasma rotation (about 0.3% of the Alfvén frequency), where the conventional dissipation is too small to fully suppress the RWMs. Here it is shown, that the trapped-particle kinetic contribution associated with the precession motion [4] is large enough to stabilize the RWM in DIII-D at low rotation. Work supported by the US-DoE OFES. [1] A. Bondeson and M. S. Chu, Physics of Plasmas, **3**,3013 (1996). [2] H. Reimerdes *et al.*, Physical Review Letters, **98**,055001 (2007). [3] M. Takechi *et al.*, Physical Review Letters, **98**,055002 (2007). [4] B. Hu and R. Betti, Physical Review Letters, **93**,105002 (2004).

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