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Measurement of the drive of m=0 and m=1 modes in the RFP SEUNG CHOI, ABDULGADER ALMAGRI, BRETT CHAPMAN, DARREN CRAIG, STEWART PRAGER, University of Wisconsin and Center for Magnetic Self-Organization in Laboratory and Astrophysical Plasmas — Magnetic fluctuations with poloidal mode numbers m = 0 and m=1 occur in MST as bursts in time. MHD computation predicts that m = 0 modes are linearly stable, but are driven through nonlinear coupling to unstable m = 1 modes. An experimental study is underway to determine the origin of the m = 0 mode. In the plasma edge we have measured the MHD linear drive term directly with magnetic and Langmuir probes (to measure the fluctuating E x B velocity). We find the m = 0 mode to be linearly damped during standard RFP plasma, consistent with theory. Extension of these measurements to the nonlinear drive terms involving coupled m=1 modes is underway. Measurements have also been made of m=0 (dominant mode in EC plasma) drive terms in EC plasma, which is self-generated enhanced confinement, and of m=1 (dominant mode in QSH plasma) drive terms in QSH plasma (Quasi Single Helicity). Work supported by U.S.D.O.E and N.S.F.

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