Abstract Submitted
for the DPP20 Meeting of
The American Physical Society

**Identifying the Micro-Tearing Modes in the DIII-D Pedestal (DEI)**[1] EHAB HASSAN, DAVID HATCH, GABRIELE MERLO, MICHAEL HALFMOON, MIKE KOTSCHENREUTHER, University of Texas at Austin, RICH GROEBNER, General Atomic at San Diego, AHMED DIALLO, Princeton Plasma Physics Laboratory — Recent and growing evidence points toward the micro-tearing mode (MTM) as an important fluctuation for the heat transport in the H-mode pedestal. An extensive study of the instabilities in the pedestal region has been carried out using local and global linear gyrokinetic simulations using the GENE code and successfully reproduced the magnetic spectrogram for an ELMy H-mode DIII-D discharge (USN configuration, 1.4 MA plasma current, and 3 MW heating power). The simulations of the main instabilities show many properties that can clearly be identified as MTM, including predominantly electromagnetic heat flux, small particle flux, and a substantial degree of tearing parity. The magnetic spectrogram from Mirnov coils exhibits three distinct frequency bands two narrow bands at lower frequency ( 50-100 kHz) and a broader band at higher frequency ( 325-425 kHz) with all peaks at r/a=0.975. Global GENE simulations reproduce these bands quantitatively, and many features of these bands can be understood from the basic physical mechanisms underlying these instabilities. For example the MTM instabilities in the lower bands of fluctuations have a slab-like nature, whereas the higher band involves toroidal effects.

[1]This work was supported by the US DOE under DE-FC02-04ER54698 and SciDAC under DE-SC0018148.

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Date submitted: 25 Aug 2020 Electronic form version 1.4