Abstract Submitted
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Pedestal Stability Analysis on MAST Equilibria in Preparation For MAST-U[1] MATTHIAS KNOLKER, THOMAS OSBORNE, SAMULI SAARELMA, General Atomics, STUART HENDERSON, UKAEA, ORSO MENEGINI, General Atomics, LUCY KOGAN, UKAEA, PHILIP SNYDER, General Atomics, MAST TEAM, DIII-D TEAM — In preparation for the upcoming MAST-U campaign, pedestal stability of spherical tokamaks is revisited by investigating the edge limiting modes of MAST discharges [1,2]. Linear stability analysis with the ELITE code [3] has been executed showing that the discharges are constrained by medium range peeling-ballooning modes, ranging from n=25 to n=30. The input parameters into the ELITE code are adapted to match the current profile of spherical tokamaks, where due to the steep q profile at the edge a larger number of poloidal harmonics is excited for each toroidal mode. Pedestal electron temperature ranges from 100-180 eV. As general stability criterion a normalization of the mode growth rate to the Alfven frequency with a critical threshold of 0.1 is found to be consistent. Ion diamagnetic effects appear to make a large stabilizing contribution in low aspect ratio tokamaks. The results demonstrate the usability of the ELITE code on spherical tokamak equilibria and encourage future work predicting MAST-U pedestals based on synthetic equilibria. ((S Saarelmaet al2007PPCF49312) A Kirk et al 2009 PPCF 51 0650163) P Snyder et al 2002, PoP9, 2037

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