

Abstract Submitted
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Edge Pedestal and ELM Scaling with Density in DIII-D¹ A.W. LEONARD, T.H. OSBORNE, M.A. MAHDAVI, T.W. PETRIE, General Atomics, M.E. FENSTERMACHER, C.J. LASNIER, LLNL, J.G. WATKINS, SNL — We report the response of edge pedestal and ELM behavior to increases in line-averaged density. Understanding the behavior of edge pedestal and ELMs at high density is important for predicting the performance of next step large tokamaks. Pressure at the top of the edge pedestal remains nearly constant as pedestal density increases to $\sim 70\%$ of Greenwald density, n_{GW} , or a line-averaged density of $\sim 90\% n_{GW}$ for typical density profiles. Above this density, pedestal pressure degrades until a transition to L-mode occurs. ELM frequency increases at higher density and energy lost at each ELM decreases. At higher density, collisionality and resistivity in the high pressure gradient region increase. This would be expected to significantly affect edge stability, which controls maximum edge pressure gradient and ELM instability. Edge stability changes are modeled for variations in edge density and compared to experimental measurements of the pedestal pressure and ELM characteristics. Edge characteristics at high density are examined at different triangularities and plasma current.

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Prefer Oral Session
 Prefer Poster Session

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Special instructions: 2nd poster in H-mode and Edge Plasma (after Takahashi)

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