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UEDGE Simulations of H-mode Pedestal Structure in DIII-D[1] N.S. WOLF, G.D. PORTER, T.D. ROGNLIEN, Lawrence Livermore National Laboratory, R.J. GROEBNER, M.A. MAHDAVI, GA — There is a lack of detailed understanding of how the H-mode pedestal will scale in next-step devices. Recent pedestal studies in the DIII-D tokamak find a strong correlation between the width of the H-mode particle barrier and the neutral penetration length.[2] A simple analytic model predicts that the neutral penetration length is determined both by particle transport and by particle fueling.[3] We have used 2-D UEDGE fluid code simulations (which include carbon impurities and realistic geometry for DIII-D) to compare with experimental results and the simple analytic model of the H-mode pedestal structure. Both the simple analytic model and UEDGE results corroborate that the barrier width decreases as the density pedestal increases and that the maximum gradient of n_e should be proportional to $(n_{e,ped})^2$. These results are consistent with the hypothesis that fueling processes play a role in H-mode barrier formation.

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[2]M.A. Mahdavi, *et al.*, Nucl. Fusion **42**, 52 (2002).
[3]R.J. Groebner, *et al.*, Phys. Plasmas **9**, 2134 (2002).

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