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Global simulation of edge pedestal micro-instabilities[1] WEIGANG WAN, SCOTT PARKER, YANG CHEN, University of Colorado — We study micro turbulence of the tokamak edge pedestal with global gyrokinetic particle simulations. The simulation code GEM is an electromagnetic δf code. Two sets of DIII-D experimental profiles, shot #131997 and shot #136051 are used. The dominant instabilities appear to be two kinds of modes both propagating in the electron diamagnetic direction, with comparable linear growth rates. The low n mode is at the Alfven frequency range and driven by density and ion temperature gradients. The high n mode is driven by electron temperature gradient and has a low real frequency. A β scan shows that the low n mode is electromagnetic. Frequency analysis shows that the high n mode is sometimes mixed with an ion instability. Experimental radial electric field is applied and its effects studied. We will also show some preliminary nonlinear results.

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