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Characterization of pedestal modes through fast vertical oscillations at DIII-D[1] ANDREW NELSON, FLORIAN LAGGNER, AHMED DIALLO, Princeton Plasma Physics Laboratory, EGEMEN KOLEMEN, Princeton University — Controlled vertical oscillations (jogs) of the plasma can be used to trigger ELMs by perturbing the edge current. In a dedicated experiment at DIII-D, oscillations were applied as tools to probe the structure and character of inter-ELM modes. Induced current at the plasma edge is shown to couple with instabilities resident in the edge transport barrier in between ELMs. These instabilities appear towards the end of the ELM cycle after clamping of the pressure gradient and are similar to fluctuations reported in a variety of experimental studies. High-resolution fluctuation diagnostics indicate that these modes are localized near the separatrix. Oscillation events are shown to modify the frequency of the inter-ELM fluctuations depending on the direction and magnitude of the induced current, an effect attributed to changes in the plasma rotation and a shift of the instability location. The radial electric field well is also influenced by jogging events, responding to changes in the current and q-profile near the plasma edge. These data provide evidence that the observed pedestal microinstabilities are affected by current density and play a role in inter-ELM profile evolution.

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