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**Simultaneous Multi-angle Measurements of Plasma Turbulence at HAARP** NAOMI WATANABE, MARK GOLKOWSKI, University of Colorado Denver, JAMES SHEERIN, Eastern Michigan University, UNIVERSITY OF COLORADO DENVER TEAM — We report the results from a recent series of experiments employing the HAARP HF transmitter to generate and study strong Langmuir turbulence (SLT) in the interaction region of overdense ionospheric plasma. Diagnostics included the Modular UHF Ionospheric Radar (MUIR) located at HAARP, the Super DARN-Kodiak HF radar, and HF receivers to record stimulated electromagnetic emissions (SEE). Short pulse, low duty cycle experiments demonstrate control and suppression of artificial field-aligned irregularities (AFAI). This allows the isolation of ponderomotive plasma turbulence effects. For the first time, plasma line spectra measured simultaneously in different spots of the interaction region displayed marked but contemporaneous differences dependent on the aspect angle of the HF pump beam and the pointing angle of the MUIR diagnostic radar. Outshifted Plasma Line (OPL) spectra, rarely observed in past experiments, occurred with sufficient regularity for experimentation. Experimental results are compared to previous high latitude experiments and predictions from recent modeling efforts.

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