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**Drift Wave Chaos and Turbulence in a LAPTAG Plasma Physics experiment** CAMI KATZ, Harvard Westlake H.S., WALTER GEKELMAN, PATRICK PRIBYL, University of California, Los Angeles, JOE WISE, Wildwood Academy, HENRY BIRGE-LEE, North Hollywood H.S., BOB BAKER, University H.S. (ret), KEN MARMIE, Roosevelt Middle H.S., SAM THOMAS, John Mashall H.S., SAMUEL BUCKLEY-BONNANO, Harvard Westlake H.S. — Whenever there is a pressure gradient in a magnetized plasma drift waves occur spontaneously. Drift waves have density and electrical potential fluctuations but no self magnetic field. In our experiment the drift waves form spontaneously in a narrow plasma column. ($n_e = 5X10^{11} cm^3$, $T_e = 3eV, B = 200Gauss$, dia = 5 cm, L= 1.5 m). As the drift waves grow from noise simple averaging techniques cannot be used to map them out in space and time. The ion saturation current $I_{sat} \propto n\sqrt{T_e}$ is recorded for an ensemble of 50 shots on a fixed probe located on the density gradient and for a movable probe. The probe signals are not sinusoidal and are filtered to calculate the cross-spectral function CSF $= \int \sum_{nshot} Ifix_{,\omega}(\vec{r}_1, t) I_{mov,\omega}(\vec{r}_1 + \Delta\vec{r}, t + \tau)\, dt$, which can be used to extract the temporal and spatially varying wave patterns. The dominant wave at 18 kHz is a rotating spiral with m=2. LAPTAG is a university-high school alliance outreach program, which has been in existence for over 20 years. Work done at the BaPSF and supported by NSF/DOE.

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