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Experimental study of fast fluctuations and turbulence during magnetic reconnection events on the VTF experiment[1] W. FOX, M. PORKOLAB, J. EGEDAL, N. KATZ, A. LE, MIT PSFC — We present measurements of electrostatic fluctuations during reconnection events on the VTF experiment at MIT. Because we have found a regime in VTF where the reconnection is "bursty" in time [1], it is an ideal experiment for answering the long-standing question of whether current-driven turbulence plays an important role in the reconnection process. Our measurement system consists of high-bandwidth, impedance-matched Langmuir probes, digitized by a fast oscilloscope. Broadband fluctuations are observed, extending up to f_{ce} ($\simeq$ 1.5 GHz, $f_{pe}/f_{ce} \simeq 10$), coincident with reconnection events both in time and space. Arrays of probes and standard cross-correlation analysis provide wavelength measurements. Non-linear phenomena, such as discrete positive potential spikes, traveling at $\sim$2-3 v_{te} and with spatial width 1-2 mm ($\simeq 50-100\ \lambda_{De}$) are also observed coincident with large reconnection events. Finally, we will discuss various instability mechanisms, with insight from a recently-installed electron energy analyzer.

[1] J. Egedal, *et al.* (2007). PRL **98**, 015003.

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