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Three-Dimensional Magnetic and Electrostatic Measurements of Spontaneous Magnetic Reconnection[1] A. LE, J. EGEDAL, W. FOX, N. KATZ, M. PORKOLAB, MIT, PSFC — A new closed magnetic configuration has recently been implemented in the Versatile Toroidal Facility (VTF) utilizing internal coils to generate a poloidal field with a characteristic X-line geometry. Although driven uniformly, reconnection often occurs in short, rapid bursts triggered internally in the plasma [1]. To study in detail the onset of fast magnetic reconnection and the accompanying three- dimensional plasma dynamics, new arrays of magnetic and electrostatic probes have been constructed. These yield high- resolution profiles of the magnetic field simultaneously at several toroidal locations. Here we present preliminary measurements on the dynamical onset and evolution of fast reconnection.

[1] J Egedal, et al., (2007) Phys. Rev. Lett. 98, 015003.

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