

Abstract Submitted  
for the DPP05 Meeting of  
The American Physical Society

**Fast soft x-ray camera observation of fast and slow reconnection events on NSTX**<sup>1</sup> BRENTLEY STRATTON, SCHWICK VON GOELER, JOSHUA BRESLAU, ERIC FREDRICKSON, WONCHULL PARK, LEONID ZAKHAROV, Princeton Plasma Physics Laboratory — Reconnection events on the National Spherical Torus Experiment (NSTX) are studied using data from a new soft x-ray camera diagnostic. The camera has a wide-angle tangential view of the plasma and can capture 300 images per discharge at rates up to 500000 frames per second. Two classes of  $m=n=1$  reconnection events are seen: events such as sawteeth and internal reconnection events (IREs) characterized by rapid ( $\sim 200 \mu\text{s}$ ) reconnection, and events in which reconnection occurs on a much slower time scale (tens of ms) with a similar spatial structure. The mode evolution is reconstructed from the fast soft x-ray camera data. Nonlinear resistive MHD modeling with the M3D code and PEST code stability analysis is used to predict the growth rates and island structures of the fast and slow events, with the goal of understanding the conditions which lead to the two types of events.

<sup>1</sup>Work supported by US DOE contract no. DE-AC02-76CH03073.

Brentley Stratton  
Princeton Plasma Physics Laboratory

Date submitted: 20 Jul 2005

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