Abstract Submitted
for the DPP07 Meeting of
The American Physical Society

Modeling of Perturbation Magnetic Field Based on Scrape-Off Layer Currents (SOLCs) During ELMs in DIII-D[1] H. TAKAHASHI, E.D. FREDRICKSON, Princeton Plasma Physics Laboratory, M.J. SCHAFFER, General Atomics — The poloidal perturbation magnetic field ($B_{\delta B}$) measured by the Mirnov diagnostic at the peak of ELMs in H-mode discharges on the DIII-D tokamak exhibits idiosyncratic features in its poloidal variation: the field peaks in the divertor, and is larger ("anti-ballooning") and opposite in sign on the inboard side in comparison with the outboard side. A model, developed for calculating $B_{\delta B}$ consistent with measured scrape-off layer current (SOLC), reproduces these idiosyncratic features. A narrow magnetic structure was also observed by the Mirnov diagnostic at the outboard mid-plane in some ELMs, which appeared to be qualitatively similar to filaments reported earlier in DIII-D [1] and NSTX [2]. The SOLC-based model also reproduces such a filament structure. [1] E.J. Strait, et al., Phys. Plasmas **4**, 1783 (1997). [2] R. Maingi, et al., Phys. Plasmas **13**, 092510 (2006).

[1]Supported by the US DOE under DE-AC02-76CH03073 and DE-FC02-04ER54758.

H. Takahashi
Princeton Plasma Physics Laboratory

Date submitted: 22 Jul 2007 Electronic form version 1.4