

**Abstract Submitted for the 53rd Annual Meeting  
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Category Number and Subject:

Theory     Experiment

**Coherent Beam-Ion Losses During Instabilities in DIII-D,\***

X. Chen, W.W. Heidbrink, *UC-Irvine*; R.K. Fisher, M.A. Van Zeeland, *GA*; D.C. Pace, *ORISE*; M. García-Muñoz, *MPI* –A scintillator-based fast-ion loss detector (FILD) was installed on DIII-D in 2010 [1] and successfully measured coherent losses produced by fast-ion driven instabilities. Loss signals at mode frequencies were observed for off-axis fishbones [2], toroidal Alfvén eigenmodes (TAEs) [3], reversed-shear AEs (RSAEs) [3], and energetic-particle driven geodesic acoustic modes. Modeling of the TAE and RSAE experiments indicate that the observed losses are predominately counter-passing ions that are scattered onto lost trapped-ion orbits by the AEs [4]. The original FILD detector is  $\sim 45^\circ$  below the midplane. For the 2011 campaign, a second FILD detector is installed at  $\theta \approx 0^\circ$  and has already observed prompt losses. Observations of coherent losses from the pair of FILD detectors will be reported.

[1] R.K. Fisher, et al., *Rev. Sci. Instrum.* **81** (2010) 10D307.

[2] W.W. Heidbrink, et al., *Plasma Phys. Control. Fusion* **53** (2011) 085028.

[3] D.C. Pace, et al., *Plasma Phys. Control. Fusion* **53** (2011) 062001.

[4] M.A. Van Zeeland, et al., *Phys. Plasmas* **18** (2011) in press.

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