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Fast Magnetic Probes for the Terrestrial Reconnection Experiment (TREX) ALEXANDER MILLET-AYALA, JAN EGEDAL, JOSEPH OLSON, SAMUEL GREESS, RACHEL MYERS, JOHN WALLACE, MIKE CLARK, CARY FOREST, University of Wisconsin - Madison — Fast magnetic reconnection is studied on the Terrestrial Reconnection Experiment (TREX) at the Wisconsin Plasma Physics Laboratory (WiPPL). The experimental scenario includes narrow electron scale current layers jogged past magnetic probes at speeds approaching 100km/s, and accurate characterization requires magnetic probes with a linear frequency response up to 10MHz. A new probe design is implemented with printed circuit boards that include termination resistors located in proximity of the magnetic pick-up loops. The design provides a 3 directional magnetic field profile at finer spatial resolution than before while keeping a high-resolution sampling rate and reduced electronic noise. In addition to the technical details on the design, we will present preliminary measurements of a three-dimensional instability observed within the electron diffusion regions during fast magnetic reconnection in the TREX configuration.

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