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Magnetic Flux Array for the Terrestrial Reconnection Experiment (TREX)¹ SAMUEL GREESS, JAN EGEDAL, JOSEPH OLSON, JOHN WALLACE, MICHAEL CLARK, CARY FOREST, UW-Madison — The Terrestrial Reconnection Experiment (TREX) at the Wisconsin Plasma Astrophysics Laboratory (WiPAL) studies kinetic reconnection in a variety of regimes. As currently configured, TREX is designed to use Helmholtz coils outside the 3m spherical WiPAL vacuum vessel to create a field that opposes a different field pulsed on by two internal coils. In order to characterize the main properties of the reconnection process in a single shot, we have constructed a nine-layered, 160 channels magnetic flux array. This array allows us to infer the magnetic flux function, Ψ , and thus the toroidal component of the vector potential, A_ϕ , as a function of time for each shot. From A_ϕ , we further obtained the magnetic field geometry, current density, and reconnection rate [1]. Preliminary data from this flux array will be presented.

[1] Kesich et al., Review of Scientific Instruments 79,063505 (2008).

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