

Abstract Submitted
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A Design Study of a New Magnetic Reconnection Experiment, MITPX P. MONTAG, J. EGEDAL, M. PORKOLAB, A. LE, A. VRUBLEVSKIS, O. OHIA, MIT, PSFC — A new model for effective heating of electrons during reconnection is now gaining support from spacecraft observations, theoretical considerations and kinetic simulations. The key ingredient in the model is the physics of trapped electrons whose dynamics causes the electron pressure tensor to be strongly anisotropic [1]. The heating mechanism becomes highly efficient for geometries with low upstream electron pressure; conditions relevant to the magnetotail. We propose a new Magnetic Interaction Toroidal Plasma Experiment (MITPX) that will be optimized for the study of kinetic reconnection including the dynamics of trapped electrons and pressure anisotropy.

[1] Le A, et al., (2009) Phys. Rev. Lett. 102, 085001.

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