

Abstract Submitted  
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**Validation of Anisotropic Electron Fluid Closure Through In Situ  
Spacecraft Observations of Magnetic Reconnection**<sup>1</sup> BLAKE WETHER-  
TON, University of Wisconsin - Madison, JAN EGEDAL, University of Wisconsin,  
ARI LE, WILLIAM DAUGHTON, Los Alamos National Lab — A valid fluid model  
for electrons in collisionless space plasmas is desirable for understanding the struc-  
ture and evolution of magnetic reconnection geometries. Additionally, such a fluid  
model would be useful for the simulation of systems too large to be tractable in a  
fully kinetic model. Using Magnetospheric Multiscale spacecraft observations, we  
provide direct confirmation of the L2009 equations of state for the electron pressure  
tensor during guide field reconnection and demonstrate how the closure can be ap-  
plied in efficient numerical simulation, yielding new physical insight to the electron  
heating problem. Furthermore, we use the L2009 equations of state to predict a  
scaling of electron heating in the exhaust comparable to the available observational  
data.

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