

## **Magnetic Reconnection: Local Plasma Dynamic versus Global Boundary Conditions**

Hantao Ji, Alexey Kuritsyn, Masaaki Yamada, and Stefan Gerhardt

*Princeton Plasma Physics Laboratory, Princeton University, USA*

In general, magnetic reconnection is determined by both local plasma dynamics and global boundary conditions. In this poster, we would like to describe a series of experiments performed in Magnetic Reconnection Experiment (MRX) to specifically study both local and global aspects of the magnetic reconnection process, as well as their relations. It is found that the current sheet length, which is usually regarded as a global quantity, can be influenced by local plasma parameters. In the meanwhile, the current sheet thickness, which is usually regarded as a local quantity, can be in turn affected by global boundary conditions. As a result, the process of magnetic reconnection, including its rates and spatial structures, is determined as a balance between the drive from global boundaries and the dissipation at local diffusion region. Implications of these results to our current understanding of magnetic reconnection and suggestions to future research will be discussed. This work is supported by DOE and NASA.