

Abstract Submitted
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Application of 3D Stereo Vision to the Reconnection Scaling Experiment¹ J. KLARENBECK, PPPL, NUF, LANL, UCF, J.A. SEARS, K.W. GAO, T.P. INTRATOR, T.E. WEBER, LANL — The measurement and simulation of the three-dimensional structure of magnetic reconnection in astrophysical and lab plasmas is a challenging problem. At Los Alamos National Laboratory we use the Reconnection Scaling Experiment (RSX) to model 3D magnetohydrodynamic (MHD) relaxation of plasma filled tubes. These magnetic flux tubes are called flux ropes. In RSX, the 3D structure of the flux ropes is explored with insertable probes. Stereo triangulation can be used to compute the 3D position of a probe from point correspondences in images from two calibrated cameras. While common applications of stereo triangulation include 3D scene reconstruction and robotics navigation, we will investigate the novel application of stereo triangulation in plasma physics to aid reconstruction of 3D data for RSX plasmas. Several challenges will be explored and addressed, such as minimizing 3D reconstruction errors in stereo camera systems and dealing with point correspondence problems.

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