

Electron Scale Magnetic Reconnection in a Laser Produced Plasma

Y. Kuramitsu¹, Y. Sakawa¹, T. Morita¹, K. Nishio², T. Ide³, H. Ide², K. Tsubouchi³, K. Tomita⁴, K. Uchino⁴, T. Moritaka¹,
and H. Takabe¹

¹Institute of Laser Engineering, Osaka University

²Graduate School of Science, Osaka University

³Graduate School of Engineering, Osaka University

⁴Interdisciplinary Graduate School of Engineering and
Sciences, Kyushu University

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Abstract

Electron scale magnetic reconnection in a laser-produced plasma is discussed. Under the influence of a weak-external magnetic field perpendicular to a plasma propagation axis, the plasma flow can be collimated due to the distortion of the magnetic field. The plasma collimation or the jet formation occurs even when the Larmor radius of the ions are much larger than the typical jet scales. The distorted magnetic field due to the plasma dynamic pressure is locally anti-parallel, i.e., magnetic reconnection is possible. We discuss the possibility of electron scale reconnection with experimental and numerical results.