

Abstract Submitted  
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**Magnetic Reconnection “Crisis” in Weakly Collisional Regimes<sup>1</sup>**

P. BURATTI, ENEA, B. COPPI, MIT — Experiments to identify the phase velocities of reconnecting modes in weakly collisional plasma regimes have focused on measuring the Doppler shift associated with the plasma local rotation. [1] The relevant phase velocity direction in the laboratory frame has been tentatively found to be that of the ion diamagnetic velocity both for ion beam and ohmic heated plasmas, the former having higher temperatures and lower densities. The expectations were that two classes of reconnecting mode could emerge: drift-tearing modes [2] and “inductive modes” [3] having opposite phase velocity directions, both classes requiring the pre-excitation of a different kind of mode [4] in order to become unstable in weakly collisional regimes. A theoretical justification for the observed mode characteristics is given.

[1] P. Buratti, Paper EXS/P5-02 (23rd IAEA Conf., 2010).

[2] B. Coppi, *Phys. Fluids* **8**, 2273 (1965).

[3] B. Coppi, *Bull. APS* **45**, 366 (2000).

[4] B. Coppi, “Collective Phenomena” Eds. G. Bertin *et al.*, *Publ. World Scientific*, **59** (2007).

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