Abstract Submitted
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**Plasmas with High Energy Particles and Relevant Magnetic Reconnection Processes*** P. BURATTI, ENEA, B. COPPI, MIT — Plasma macroscopic modes producing magnetic reconnection with finite frequencies of oscillation that have a phase velocity in the direction of the ion diamagnetic velocity have been identified in collisionless plasmas with strong neutral beam heating produced by the DIII-D and the JET machines. Modes with this feature had been proposed[1] to account for the observation of "high-$m$ fishbones" in plasmas with high energy particle populations[2], as they can resonate with the magnetic curvature drift frequencies of these populations. The theoretical model[1] introduced for the relevant reconnection layer was based on the presence of a "finite inductivity" prevailing over the effects of finite electrical resistivity[3]. In view of a more recent theory[4], the excitation of electron temperature gradient driven modes producing strings of microscopic islands can be considered as a natural candidate to justify the envisioned finite inductivity through the coupling of these microreconnecting modes to the macroscopic modes. *Sponsored in part by ENEA of Italy and in part by the U.S. D.O.E. [1]B. Coppi, Bull. Am. Phys. Soc. **45**, 366 (2000). [2]K. Toi, *et.al.*, IAEA Fusion Energy 1998, F1-CN69-EXP1/19. [3]B. Coppi, *Phys.Fluids* **8**, 2273 (1965). [4]B. Coppi, in "Collective Phenomena in Macroscopic Systems" pg. 59, Eds. G. Bertin *et.al.*, Publ. World Scientific (2007).

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