Abstract Submitted
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Platform for the study of magneto-collisional instabilities driven by high current charged particle beam[1] C. A. J. PALMER, Uni. Oxford, QUB, A. R. BELL, Uni. Oxford, A. BIRKEL, MIT, A. F. A. BOTT, Princeton Uni., D. FROULA, Uni. Rochester, LLE, O. KARNBACH, Uni. Oxford, J. KATZ, LLE, D. LAMB, Uni. Chicago, C. -K. LI, MIT, J. H. MATTHEWS, Uni. Cambridge, J. MEINECKE, Uni. Oxford, H. -S. PARK, LLNL, R. PETRASSO, MIT, A. P. L. ROBINSON, CLF, RAL, S. SARKAR, A. SCHEKOCHIHIN, Uni. Oxford, L. O. SILVA, IST, Uni. Lisbon, P. TZEFERACOS, Uni.Rochester, LLE, M. VRANIC, IST, Uni. Lisbon, H. CHEN, LLNL, G. GREGORI, Uni. Oxford — Diffusive particle acceleration in shocks is a likely source of cosmic rays. To be consistent with observations, acceleration by this method requires that local magnetic fields are amplified above the mean interstellar field. It has been proposed that the passage of cosmic rays through the background plasma could self-consistently amplify the fields through the development of magneto-collisional instabilities. The TDYNO platform has been developed, in which rapid magnetic field amplification to near equipartition with the turbulent fluid motions has been demonstrated, through the action of the turbulent dynamo. This subsonic, stochastically magnetized plasma provides an opportunity to study physics relevant to the interstellar medium. Here, we present results from experiments which adapt this target platform to study magneto-collisional instabilities driven by kA/mm^2 current densities.

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Charlotte Palmer
University of Oxford

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