

Abstract Submitted
for the APR08 Meeting of
The American Physical Society

Investigation of flute and lower hybrid drift instabilities in application to laboratory astrophysics and Z-pinch experiments¹ V.I. SOTNIKOV, V. IVANOV, R. PRESURA, J. KINDEL, University of Nevada at Reno, NV 89523 USA, J.N. LEBOEUF, JNL Scientific, Casa Grande, AZ 85222, USA, O.G. ONISHCHENKO, Institute of Physics of Earth, 123995 Moscow, Russia, B.V. OLIVER, T.A. MEHLHORN, Sandia National Laboratories, NM 87123 USA, C. DEENEY, Department of Energy, Washington, DC 20585 USA — In a cylindrical Z-pinch plasma column and in a laser ablated plasma flows interacting with an external magnetic field conditions are favorable for excitation of flute and lower hybrid drift oscillations. Linear analysis of the flute mode instability in a finite beta Z-pinch plasma has demonstrated good agreement between theory and experimental data. Laboratory experiments on the interaction of a plasma flow, produced by laser ablation of a solid target with the inhomogeneous magnetic field demonstrated the presence of strong wave activity in the region of the flow deceleration. Excitation of flute-type modes as well as LHD waves with plasma and magnetic field parameters, corresponding to the ongoing experiments is examined.

¹Work supported by the US Department of Energy under Grant No. DE-FC52-01NV14050 at UNR, and Contract DE-AC04-94AL85000 at Sandia National Laboratories

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Date submitted: 15 Jan 2008

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