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Influence of ion temperature gradient effects on magnetic-curvature-driven flute instability¹ V.I. SOTNIKOV, J.M. KINDEL, O.G. ONISHCHENKO, E. YASIN, University of Nevada at Reno, NV 89557, USA, J.N. LEBOEUF, JNL Scientific, Casa Grande, AZ 85294, USA, B.V. OLIVER, T.A. MEHLHORN, Sandia National Laboratories, Albuquerque, NM 87123, USA, C. DEENEY, Department of Energy, Washington, DC 20585, USA — In order to study flute mode instability in the presence of ion temperature gradient effects, a nonlinear system of equations in two fluid approximation applicable for spatial scales comparable with the ion Larmor radius was derived. Linear analysis of this system shows that the range of unstable wavelengths in a plasma with large ion charge numbers extends into the region of spatial scales of the order of the ion Larmor radius. Nonlinear stage of the instability was analyzed with the modified version of the numerical code FLUTE. Mixing length estimates of nonlinear saturation levels are in good agreement with simulation results.

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