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Stable plasma flow to absorbing boundary in a magnetized two ion species plasma DEVENDRA SHARMA, PREDHIMEN KAW, Institute for Plasma Research, Bhat, Gandhinagar 382428, India — Study has been carried out to analyze the effect of magnetic field on the behavior of plasma flow to a perfectly absorbing plasma boundary in a magnetized two ion-species plasma. Recent experiments and theoretical studies [D. Lee, L. Oksuz and N. Hershkovitz, Phys. Rev. Lett. 99, 155004 (2007), C. S. Yip, N. Hershkowitz and G. Severn, Phys. Rev. Lett. 104, 225003 (2010)] have indicated that in unmagnetized cases, the two ion velocities approach a common ion sound speed of the system near the sheath-presheath boundary and satisfy the generalized form of Bohm-Criterion. This behavior is influenced further by the presence of a magnetic field in the cases where the presheath mechanisms scale with the ion-Larmour radius. Our analysis indicates additional regions in the parameter-space of magnetized plasma where the boundary flow is unstable. The effect appears as a consequence of modification of the usual ion-acoustic dispersion relation resulting from the partial magnetization of the ion species.

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