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Peer Review

Review of: "Drift-Cyclotron Loss-Cone Instability in 3D Simulations of a Sloshing-Ion Simple Mirror"

Young Dae Yoon[1,2]

1. Asia Pacific Center for Theoretical Physics, Pohang, South Korea; 2. Pohang University of Science and Technology, Korea, Republic of

The manuscript “Drift-cyclotron loss-cone instability in 3D simulations of a sloshing-ion simple mirror,” by Tran et al., presents an extremely comprehensive study of DCLC modes in the WHAM mirror device, and further analyses on possible mitigation methods with cool plasma. The manuscript is comprehensive, well-written, and lays out the present limitations quite clearly, and so is suitable for publication. The three previous reviews have pointed out good minor points, which I will not reiterate here. However, I do have an additional minor suggestion for the authors regarding the isothermal closure for the electrons.

The authors do acknowledge the limitation due to this closure in the conclusion, and one of the reviewers also points this out, but I think a little more elaboration on the effects of employing the full pressure tensor in Eq. 2.1 is desirable. For example, a straightforward generalization would be employing pressure anisotropy due to, e.g., CGL closure. Can the authors provide an estimate of how the anisotropy would change the nature of the modes, and if the change would be important at all? Section 4.3 already addresses electron kinetic effects; employing a bi-Maxwellian distribution in Eq. 3.3 would be a straightforward calculation that would be very informative.

Having said that, the content in the manuscript is already quite comprehensive, and so I leave it up to the authors to decide whether to include this in their revised manuscript.

Declarations

Potential competing interests: No potential competing interests to declare.

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