

Accepted Manuscript

High-order finite-volume modeling of drift waves

M. Dorf, M. Dorr, J. Hittinger, W. Lee, D. Ghosh

PII: S0021-9991(18)30464-9
DOI: <https://doi.org/10.1016/j.jcp.2018.07.009>
Reference: YJCPH 8134

To appear in: *Journal of Computational Physics*

Received date: 11 July 2017
Revised date: 21 June 2018
Accepted date: 4 July 2018

Please cite this article in press as: M. Dorf et al., High-order finite-volume modeling of drift waves, *J. Comput. Phys.* (2018), <https://doi.org/10.1016/j.jcp.2018.07.009>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



Highlights

- The paper discusses high-order finite-volume numerical modeling of drift waves, which is an ubiquitous phenomenon in magnetized plasmas.
- It is found that standard discretization methods applied to the conservative form of the governing equations can lead to a numerical instability.
- A method to stabilize high-order discretization is proposed and demonstrated to work in numerical simulations performed with the fourth-order finite-volume code COGENT.
- As practical examples, a stable drift-wave solution with adiabatic electrons and the collisionless (universal) drift-wave instability driven by electron kinetic effects are considered.

Download English Version:

<https://daneshyari.com/en/article/6928533>

Download Persian Version:

<https://daneshyari.com/article/6928533>

[Daneshyari.com](https://daneshyari.com)