

## ***Interactive comment on “Vlasov simulation of electrons in the context of hybrid global models: A Vlasiator approach” by Markus Battarbee et al.***

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I have read this paper with much interest, since it promises to solve a long-standing problem in plasma simulations, namely the large separation of scales between ions and electrons. However, I have found this paper disappointing and completely unclear in the descriptions of the numerical algorithm. For me, the main question remains: How can you follow the electron VDF in a hybrid model? Either you have kinetic electrons or you don't.

This approach does not seem to follow neither the Darwin approximation, nor the neutral vlasov approach proposed in <https://doi.org/10.1063/1.4907665>

So how do they do it??

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Discussion paper



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Interactive comment on Ann. Geophys. Discuss., <https://doi.org/10.5194/angeo-2020-31>, 2020.

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