

Abstract Submitted
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Variational and Hamiltonian techniques for plasma kinetic theory¹ ALEXANDER CLOSE, CESARE TRONCI, University of Surrey — Hamiltonian and variational methods have been particularly useful in the development of new kinetic and hybrid models. Here, we present a systematic construction that relates all these approaches. In particular, the Maxwell-Vlasov system is presented in both Lagrangian and Eulerian descriptions, and at the same time in both variational and Hamiltonian formulations. We unfold the relationship between all four pictures by using geometric techniques that include reduction by symmetry, gauge fixing and momentum maps. Eventually these tools are applied to hybrid kinetic-MHD systems to provide new variants of their low-gyrofrequency approximations.

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