

Large Time Behavior of Collisionless Plasmas

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Abstract

Collisionless plasmas arise in a variety of settings, ranging from magnetically confined plasmas to study thermonuclear energy to space plasmas in planetary magnetospheres and solar winds. The two fundamental models that describe such phenomena are comprised of complicated systems of nonlinear partial differential equations known as the Vlasov-Maxwell (VM) and Vlasov-Poisson (VP) systems. We will briefly derive these kinetic models and describe recent results concerning the large-time asymptotic behavior of solutions to such systems.