

A new numerical adaptative method for solving kinetic equations based on local grids

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Abstract

The aim of this work is to present a new numerical deterministic method for solving kinetic equations. The originality of this method is to introduce local grids for the velocity variable contrarily to the classical discrete velocity methods which uses a global grid during all the simulation. But these classical methods posses a huge computational cost and realistic cases are difficult to simulate. The dynamical grids are constructed from a system of conservation laws and the projection of the distribution functions on the new grid is obtained by using interpolation procedures. This interpolation is made with essentially non oscillatory technique and we will show that this method is able to diminish the oscillations that can be created by the interpolation procedure. During this talk we will show that this method is well adapted to physical situations involving sharp gradients of temperatures like in shock interaction problems.