

Moment method for 3D Vlasov equation with anisotropic magnetic field

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Moment methods for the approximation of Vlasov equations regain a lot of interest, in particular with Hermite polynomials which reveal particularly adapted to Gaussian profiles. However the application of moment methods to Vlasov equation with a non constant strong 3D forcing magnetic field is less evident. We will review the recent advances made within the MUFFIN project (Després Dai, Charles and Hirstoaga).

In particular we will describe the matricial structure of the moment method for Vlasov equations with strong magnetic field, explain the role of the cyclotron kernel, and illustrate with basic problems of the literature that we recently calculated with our new Muffin 3D Finite Element+Moments numerical tool.