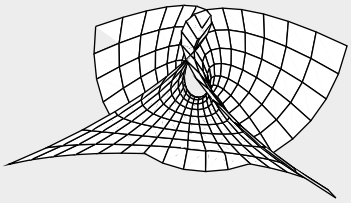

Oberseminar Mathematische Strömungsmechanik

Institut für Mathematik der Julius-Maximilians-Universität Würzburg

Hyperbolic equations - structure preserving methods & other topics

Francis Filbet

Toulouse, France

On the stability of conservative discontinuous Galerkin/Hermite spectral methods for the Vlasov-Poisson system

Abstract:

We study a class of spatial discretizations for the Vlasov-Poisson system written as an hyperbolic system using Hermite polynomials. In particular, we focus on spectral methods and discontinuous Galerkin approximations. To obtain L^2 stability properties, we introduce a new L^2 weighted space, with a time dependent weight. For the Hermite spectral form of the Vlasov-Poisson system, we prove conservation of mass, momentum and total energy, as well as global stability for the weighted L^2 norm. These properties are then discussed for several spatial discretizations. Finally, numerical simulations are performed with the proposed DG/Hermite spectral method to highlight its stability and conservation features.

via Zoom video conference (request the Zoom link from klingen@mathematik.uni-wuerzburg.de)

Friday, Nov. 5 at 3 pm CET

Zu diesem Vortrag sind Sie herzlich eingeladen.

gez. Christian Klingenberg