

# HIERARCHICAL LAGRANGE TYPE FINITE ELEMENTS FOR THE ADAPTIVE RESOLUTION OF THE VLASOV EQUATION

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This talk concerns the numerical resolution of the Vlasov equation with a semi-Lagrangian method. We consider here an adaptive method introduced in [1] where biquadratic finite elements are used and where a convergence study has been carried out in [2] for linear elements. We generalize here this type of numerical scheme for higher order Lagrange elements and we exhibit numerical results. This work is done in collaboration with E.Violard and O. Hoenen (ICPS, Strasbourg) and belongs to the CALVI project (INRIA).

## REFERENCES

- [1] M. Campos Pinto and M. Mehrenberger, *Adaptive numerical resolution of the Vlasov equation*, Numerical Methods for Hyperbolic and Kinetic Problems, CEMRACS 2003/IRMA Lectures in Mathematics and Theoretical Physics 7, 43–58.
- [2] M. Campos Pinto and M. Mehrenberger, *Convergence of an Adaptive Scheme for the one dimensional Vlasov-Poisson system*, rapport INRIA RR-5519.

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