

## Spectral scheme for the linear Boltzmann BGK equation on the real line

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We present a fully spectral scheme in both space and velocity for an inhomogeneous kinetic equation on the real axis. The collision operator admits several conservation laws, and their number depends on the harmonicity of the potential  $\phi$ . Our scheme is based upon a projection on Hermite polynomials in velocity and on orthonormal polynomials with respect to the weight  $\exp(-\phi)$  in space. For a polynomial potential  $\phi$ , the scheme preserves every conservation laws and hypocoercivity. If there is time, we will talk about approximation by orthonormal polynomials associated with an exponential weight.

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