

# **Gevrey smoothing for weak solutions of the fully nonlinear homogeneous Boltzmann and Kac equations without cutoff for Maxwellian molecules**

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## **Resumo/Abstract:**

It has long been suspected that the non-cutoff Boltzmann operator has similar coercivity properties as a fractional Laplacian. This has led to the hope that the homogenous Boltzmann equation enjoys similar regularity properties as the heat equation with a fractional Laplacian. In particular, the weak solution of the fully nonlinear non-cutoff homogenous Boltzmann equation with initial datum in  $L^1_2(\mathbb{R}^d) \cap L \log L(\mathbb{R}^d)$ , i.e., finite mass, energy and entropy, should immediately become Gevrey regular for strictly positive times. We, this is joint work with Jean-Marie Barbaroux, Tobias Ried, and Semjon Vugalter, prove this conjecture.