

# On a simplified Nordheim equation

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For a diluted and weakly interacting gas of bosons, homogeneously distributed, the time evolution of its density function in the space of velocities is described by the Nordheim equation.

In the isotropic case, it has been proved separately in [1] and [2] that a local condition on the initial data implies that solutions develop a Dirac delta at the origin in finite time. Such a concentration phenomenon could be regarded as a mathematical description of the Bose-Einstein condensate.

In this short talk we will present some mathematical properties of a kinetic equation describing the interaction between the Dirac delta and the rest of the gas in the Nordheim equation. Global existence of weak solutions, conservation laws, moment production, and condensation will be addressed.

## Références

- [1] ESCOBEDO, M., VELÁZQUEZ, J.J.L., *Finite time blow-up and condensation for the bosonic Nordheim equation*, *Inventiones mathematicae*, **200**, 761-847, (2015).
- [2] LU, X., *The Boltzmann equation for Bose-Einstein particles: condensation in finite time.*, *J. Stat. Phys.* **150**, 1138-1176, (2013).

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