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## **Perturbative treatment of particle interactions in Kinetic Field Theory**

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Finding an analytic theory to describe non-linear cosmic structure formation has proven to be a challenge that is yet to be solved in a satisfactory way.

What makes the matter so difficult is that we are looking at a system of classical particles far from equilibrium with long-range interactions.

One theory that has been developed in recent years to tackle such systems is Kinetic Field Theory (KFT), which uses the microscopic phase-space dynamics of individual particles to predict collective quantities of the entire system, such as correlation functions.

In contrast to more established analytical methods such as Eulerian- or Lagrangian perturbation theory KFT, in principle, offers a complete description of the system and does not suffer from inconsistencies arising due to the crossing particle streams.

I want to present recent progress in the description of particle interactions in the framework of KFT and how this affects our predictions for measurable quantities such as the non-linear dark matter power spectrum.

### **Topic Field**

Cosmology

### **Faculty position**

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