

## **abstract**

COMBINED MEMBERS SEMINAR AND MATHEMATICAL PHYSICS SEMINAR

Topic:

Speaker:

Affiliation:

Date:

Time/Room:

---

We shall revisit the Boltzmann equation for rarefied non-linear particle dynamics, of conservative or dissipative nature, and on the stochastic N-particle model, introduced by M. Kac [19]. Related to this equation, we consider a probabilistic dynamics from generalizations to N-particle model which includes multi-particle interactions.

From basic symmetries and invariances for a general class of stochastic interactions, we show existence and uniqueness of states and recover the longtime dynamics and decay rates approaching stable laws characterized by self-similar rescaling, with finite or infinity energy initial data. We classify the moments integrability and see that broad tails (Pareto type) attractors are possible.

There is a large class of applications to these models including classical elastic or inelastic Maxwell type interactions with or without a thermostat, and social dynamics such as information percolation models, or wealth distributions models with Pareto tail formation.

We can also see that for a particular choice of initial states and integration kernels, the Fourier transformed linear Boltzmann-Maxwell equation, extended to the complex plane, has some well known special function solutions.