



**Invitation to Seminar Talk**

# The Vlasov equation & mean field limit of a particle system

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**Host: Laszlo Erdős**

In this talk we present some results about how the Vlasov equation can be seen to arise as a mean field limit of a system of interacting particles. This is understood well for nice enough interaction potentials, and we re-express known results using notions from probability theory and optimal transportation. The situation gets more complicated as soon as one considers interactions which become singular at small distances such as the Coulomb force or the gravitational force, i.e. a force of the form  $1/|x|^a$  with  $a = d - 1$  and  $d$  the dimension of the system. We explain key ideas in the proof of the mean field limit and the propagation of chaos in the case  $a < d-1$  but very close to  $d-1$ . This involves a control on the trajectories of particles that get very close to each other in position-velocity space.

**Tuesday, 9 December 2014, 3:00pm**

**Mondi2, Central Building, 1<sup>st</sup> floor**



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This invitation is valid as a ticket for the IST Shuttle from and to Heiligenstadt Station. Please find a schedule of the IST Shuttle on our webpage (note that the IST Shuttle times are highlighted in dark green):

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