1125-35-2822 **Milana Pavic-Colic** and **Maja Taskovic***, taskovic@math.upenn.edu. *Exponential moments for the homogeneous Kac equation.*

The Kac equation is a model for a one-dimensional rarefied gas in which particle collisions conserve mass and energy but not the momentum. It can be viewed as a simplified model of the Boltzmann equation for Maxwell molecules. Like the Boltzmann equation, it is an integro-differential equation with a bilinear integral operator. The angular kernel of the integral operator often has a non-integrable angular singularity (non-cutoff regime) with is sometimes cut off to simplify the analysis of the equation. The non-integrable singularity though is known to have a smoothing effect.

In 1993 Desvillettes proved that the homogeneous Kac equation with an angular cutoff propagates exponential moments of order 2 and of order 1. We apply recent techniques of Mittag-Leffler moments to show propagation of exponential moments of all orders between 0 and 2 (not necessarily integers). Using the same technique we are also able to treat the non-cutoff Kac equation, in which case the order of the exponential moment depends on the singularity rate of the angular kernel. We also consider the Boltzmann equation for Maxwell molecules, both with and without an angular cutoff. This is a joint work with Milana Pavic-Colic. (Received September 20, 2016)