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DK Seminar

April 20, 2016, 14:15 - 15:45

University of Vienna,

Oskar-Morgenstern-Platz 1, WPI seminar room, 8th floor

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From Newton's law to the linear Boltzmann equation without cut-off

We provide a rigorous derivation of the linear Boltzmann equation without cut-off starting from a system of particles interacting via a potential with infinite range as the number of particles N goes to infinity under the Boltzmann-Grad scaling. The main difficulty in our context is that, due to the infinite range of the potential, a non-integrable singularity appears in the angular collision kernel, making no longer valid the single-use of Lanford's strategy. Our proof relies then on a combination of Lanford's strategy, of tools developed recently by Bodineau, Gallagher and Saint-Raymond to study the collision process, and of new duality arguments to study the additional terms associated to the long-range interaction, leading to some explicit weak estimates.