

ANALYSIS AND DIFFERENTIAL GEOMETRY
SEMINAR

On deriving the Vlasov equation and its Hamiltonian structure

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Abstract: The Vlasov equation is a nonlinear PDE used to model plasmas in physics. It can be rigorously derived from Newton's laws of motion for many particles via empirical measures, or by a hierarchy of equations called the BBGKY hierarchy in a mean-field limit. The Vlasov equation itself contains geometric information, called a Hamiltonian structure, which is shared by the finite particle dynamics. In this talk, I will explain how to rigorously derive one Hamiltonian structure from the other. This is joint work with Andrea R. Nahmod, Natasa Pavlovic, Matt Rosenzweig, and Gigliola Staffilani.

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