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Navier-Stokes equations for nearly integrable quantum gases.

The Navier-Stokes equations are paradigmatic equations describing hydrodynamics of an interacting system with microscopic interactions encoded in transport coefficients. In this talk I will present recent results showing how the Navier-Stokes equations arise from the microscopic dynamics of nearly integrable 1d quantum many-body systems. The method builds upon the recently developed hydrodynamics of integrable models to study the effective Boltzmann equation with collision integral taking into account the non-integrable interactions. I will illustrate the approach by computing the transport coefficients for an experimentally relevant case of coupled 1d cold-atomic gases.

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