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Generalized hydrodynamics and non-equilibrium steady states in integrable many-body quantum systems[1] ROMAIN VASSEUR, UC Berkeley and Lawrence Berkeley National Laboratory, VIR BULCHANDANI, University of California, Berkeley, CHRISTOPH KARRASCH, FU Berlin , JOEL MOORE, UC Berkeley and Lawrence Berkeley National Laboratory — The long-time dynamics of thermalizing many-body quantum systems can typically be described in terms of a conventional hydrodynamics picture that results from the decay of all but a few slow modes associated with standard conservation laws (such as particle number, energy, or momentum). However, hydrodynamics is expected to fail for integrable systems that are characterized by an infinite number of conservation laws, leading to unconventional transport properties and to complex non-equilibrium states beyond the traditional dogma of statistical mechanics. In this talk, I will describe recent attempts to understand such stationary states far from equilibrium using a generalized hydrodynamics picture. I will discuss the consistency of "Bethe–Boltzmann" kinetic equations with linear response Drude weights and with density-matrix renormalization group calculations.

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