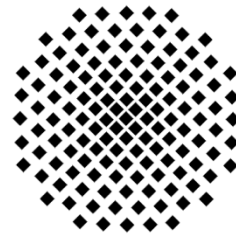


# Stuttgarter Physikalisches Kolloquium

Fachbereich Physik, Universität Stuttgart  
Max-Planck-Institut für Festkörperforschung  
Max-Planck-Institut für Intelligente Systeme

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Dienstag, 11. Dezember 2018

16:00 Uhr c.t.

Hörsaal V 57.01

Universität Stuttgart, Pfaffenwaldring 57, 70569 Stuttgart-Vaihingen

Gastgeber: Prof. Dr. Martin Dressel, Universität Stuttgart, Telefon: 0711 - 685-64946

## Quantum mechanical bounds on transport from first principles

**Sean Hartnoll**  
Stanford University

### Abstract

Some of most difficult theoretical challenges in strongly-interacting many-body systems are concerned with transport. This involves understanding quantities such as the electric resistivity, the thermal conductivity, the viscosity, spin diffusivity etc. of media as diverse as the quark-gluon plasma, unconventional metals and cold atomic gases. I will argue that a handle on these problems can be gained from understanding fundamental limits on the dynamics of many-body systems imposed by quantum mechanics and statistical mechanics themselves. The advantage of this approach is that it does not depend on the presence of weakly interacting quasiparticles.