

UNIVERSITÄT LEIPZIG

Fakultät für Physik und Geowissenschaften

Institute für Physik

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gemeinsames

# Physik-/ NTZ-Kolloquium

Donnerstag, den 26.11.2009, um 17:00 Uhr

**Prof. Dr. Nobuyasu Ito**

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The University of Tokyo

## Simulation study on nonequilibrium transport phenomena

Modern supercomputers are so powerful that molecular dynamics simulations of microscopic interactions can reproduce the nonequilibrium behavior of macroscopic materials. Examples are linear nonequilibrium transport phenomena such as Fourier's law of thermal conduction, Ohmic electric resistance and Newtonian fluid viscosity. Open challenges are strongly nonlinear phenomena and the precise characterization of nonequilibrium states. In this talk, I shall concentrate on the dimension dependence of thermal conduction, especially the crossover from microscopic reversible dynamics to Fourier's law. For thermal flow, the nonequilibrium distribution function is shown to depend on the velocity distribution. In an outlook on the perspectives of future capability computing at exa-flops-scale a statistical physics analogy between molecules forming materials and individuals forming societies will be touched.

**Ort: Hörsaal für Theoretische Physik, Linnéstraße 5**

**Alle Teilnehmer sind ab 16:30 Uhr zu Kaffee und Gebäck in die Aula eingeladen.**