



Physical Sciences Seminar

Negative resistance, super-ballistic conductance and other wonders of viscous electronics

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Quantum-critical strongly correlated systems feature universal collision-dominated collective transport. Viscous electronics is an emerging field dealing with systems in which strongly interacting electrons flow like a fluid. We identified vorticity as a macroscopic signature of electron viscosity and linked it with a striking macroscopic DC transport behavior: viscous friction can drive electric current against an applied field, resulting in a negative resistance, recently measured experimentally in graphene. I shall also describe current vortices, expulsion of electric field, conductance exceeding the fundamental quantum-ballistic limit and other wonders of viscous electronics. Strongly interacting electron-hole plasma in high-mobility graphene affords a unique link between quantum-critical electron transport and the wealth of fluid mechanics phenomena.

Friday, June 23, 2017 09:00am - 10:00am

Mondi Seminar Room 2, Central Building



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