

THEORIEKOLLOQUIUM

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Mesoscopic energy conversion, thermal control and beyond

A new subfield, inelastic thermoelectricity, is illustrated where the elementary physical pictures and models are introduced. We show several advantages of inelastic thermoelectricity: the potential for high-performance thermoelectricity and the anomalous transport effects that cannot be realized in elastic transport. We specially focus on several unusual effects: cooling by heating and linear thermal transistor effect, for instance. We further discuss thermal control using nonlinear thermoelectric effect, universality of optimal efficiency and power for general thermodynamic systems.

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