Microscopic nature of dissipation and anti-dissipation

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In this short course we discuss several examples of the microscopic processes hiding behind the conventional phenomenological models of dissipation in solid mechanics and beyond.

Lecture 1. Restitution coefficient and the structure of shocks.

Lecture 2. Falling heavy chains and the Clapeyron's theorem.

Lecture 3. Crystal plasticity and phase transitions.

Lecture 4. Radiative damping of crystal defects and thermalization.

Lecture 5. Molecular motors and active matter.