

MA T H E M A T I C A L PH Y S I C S SE M I N A R

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A mechanical model for Fourier's law of heat conduction

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Abstract

A full rigorous derivation of Fourier's law for heat conduction from the laws of mechanics remains a major unsolved problem. Here we present a deterministic mechanical model of a heat-conducting chain with non-trivial interactions, where kinetic energy fluctuations at the nodes of the chain are removed. In this model the derivation of Fourier's law can proceed rigorously.