

FOURIER'S LAW OF HEAT CONDUCTION FROM MICROSCOPIC PRINCIPLES.

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ABSTRACT. In the first part of the 2008 strategy of Gaspard and Gilbert to derive Fourier's heat conduction law, one should establish - in the rare interaction limit - transition from the microscopic model to a mesoscopic one, i. e. from the full kinetic description to a Markov jump process. Primarily I report on our approach to this truly dynamical problem, joint with P. Bálint, P. Nándori, T. Tasnády and IP. Tóth. Here the initial idea is to use standard pairs of Chernov-Dolgopyat. Further, I briefly present results on our model, joint with A. Grigo and K. Khanin, for treating the second part of the strategy: to derive the macroscopic heat equation from the mesoscopic description.