The Fermi-Pasta-Ulam Oscillating Chain: Thermostatting Mechanisms

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The thermal conduction of heat energy along a one dimensional chain of interacting nonlinear oscillators is still very much an anomaly since the pioneering work of Fermi, Pasta and Ulam in 1952. The seemingly straight forward response of this system to a temperature gradient does not lead to a finite thermal conductivity coefficient as expected. It appears that the heat current is 'too small' (in a number of particle, N, sense) to ensure that the thermal conductivity exists in the thermodynamic limit. We have examined the effects of the thermostatting mechanisms responsible for the temperature gradient and update these findings here at this meeting.