

# An exact Green-Kubo type relation for open classical systems

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We obtain an exact Green-Kubo type linear response result for the heat current in an open system. The result is derived for classical Hamiltonian systems coupled to heat baths. Both lattice models and fluid systems are studied and several commonly used implementations of heat baths, stochastic as well as deterministic, are considered. The results are valid in arbitrary dimensions and for any system sizes. Our results are useful for obtaining the linear response transport properties of mesoscopic systems. Also we point out that for systems with anomalous heat transport, as is the case in low-dimensional systems, the use of the standard Green-Kubo formula is problematic and the open system formula should be used.

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