Abstract Submitted
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Nonlinear thermoelectric response of quantum dots STEFAN KIRCHNER, FARZANEH ZAMANI, Max Planck Institute for Physics of Complex Systems, ENRIQUE MUNOZ, Pontificia Universidad Catolica de Chile, LUKAS MERKER, THEO COSTI, Forschungszentrum Juelich GmbH — The thermoelectric transport properties of nanostructured devices continue to attract attention from theorists and experimentalist alike as the spatial confinement allows for a controlled approach to transport properties of correlated matter. Most of the existing work, however, focuses on thermoelectric transport in the linear regime despite the fact that the nonlinear conductance of correlated quantum dots has been studied in some detail throughout the last decade. To go beyond the linear response regime, we use a recently developed scheme [1], to address the low-energy behavior near the strong-coupling fixed point at finite bias voltage and finite temperature drop at the quantum dot. We test the reliability of the method against the numerical renormalization group [2] and determine the charge, energy, and heat current through the nanostructure. This allows us to determine the nonlinear transport coefficients, the entropy production, and the fate of the Wiedemann-Franz law in the non-thermal steady-state [3].

[1] E. Munoz et al, arXiv:1111.4076.
[2] L. Merker et al, in preparation.
[3] S. Kirchner, F. Zamani, and E. Munoz, in "New Materials for Thermoelectric Applications: Theory and Experiment," Springer (2012).

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