

## Poster 5

**Thermoelectric properties of an Aharonov-Bohm ring in presence of dephasing**Thomas Decultot, Gianmichele Blasi, and Géraldine Haack*Department of Applied Physics, University of Geneva*

Few years ago, the AB ring has been shown to exhibit giant thermoelectric response in the linear and non-linear response regimes [1,2]. Remarkably, this device is fully tunable through the magnetic flux enclosed by the ring. A question which remained opened until now concerns the role of electronic quantum phase coherence in this device. In this work [3], we investigate the quantum-to-classical limit of thermoelectric properties of the AB ring, in presence of dephasing. We consider different models for dephasing and relaxation processes, and show that the large thermoelectric response in this nanoscale device originates in the electronic phase coherence of the electrons. This work contributes to the general question of demonstrating a quantum advantage of nanoscale devices operating in the quantum regime over their classical counterparts.

[1] G. Haack and F. Giazotto, Phys. Rev. B **100**, 235442 (2019).

[2] G. Haack and F. Giazotto, AVS Quantum Sci. **3**, 046801 (2021).

[3] G. Blasi, T. Decultot, F. Giazotto, and G. Haack, in preparation.