Tunable photonic heat transport across superconducting circuits

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By integrating the tools of ultra-sensitive microwave bolometry with those of superconducting circuits (qubits), we have experimentally realised tunable photonic heat transport between mesoscopic thermal baths embedded in superconducting resonators, interfaced with a superconducting artificial atom.

We will present recent observations of heat transport in two scenarios:

- where the resonators are symmetric, highlighting the role of the various coupling elements and the applicability of local vs global models for understanding this flux-tunable transport [1]
- where the resonators are asymmetric, yielding a rectification based on the direction of transport [2]

[1]A.Ronzani et al, *Tunable photonic heat transport in a quantum heat valve*, Nat. Phys. **14**, 1991?995 (2018).
[2]J.Senior et al, *Thermal rectification via photon blockade in a superconducting artificial atom*, in preparation.