UNIVERSITÄT DUISBURG ESSEN

PHYSIK E=

Physikalisches Kolloquium

Mittwoch, 16.06.2021
13:00 Uhr
ZOOM-Online-Meeting

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Quantum thermodynamics - superconducting circuit approach

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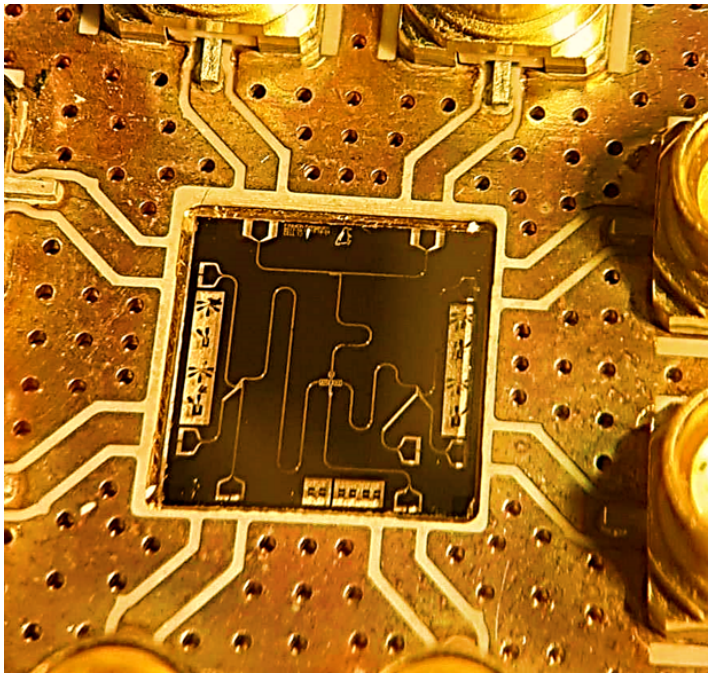

I start by introducing ideas and principles of how to realize thermodynamic phenomena and devices in circuits composed of superconducting elements, including qubits, combined with heat baths formed of on-chip electronic reservoirs. This way we have demonstrated quantum limited heat transport by microwave photons [1,2], quantum heat valves [3] and rectifiers [4] and ultrasensitive calorimetric detectors [5]. Towards the end of the talk I will present how we plan to realize quantum heat engines and refrigerators based on thermodynamic cycles [6] and considerations on ultimate energy resolution of nanocalorimeters [5,7,8].

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