

Dissertation press release

05.12.2019

Heat management for future quantum computers

Title of the dissertation	Heat Transport in Superconducting Quantum Circuits
Contents of the dissertation	<p>In this dissertation, we present experiments looking at the interface between thermodynamics, dissipation, and heat management, with the superconducting circuits essential in many quantum technologies, such as quantum computers and sensors.</p> <p>In particular, we demonstrate the fabrication and operation of a superconducting quantum bit, and measure how adding dissipation to a superconducting resonator changes the operational properties. We then combine two dissipative resonators with a superconducting qubit as the interface, to study thermodynamic transport in this hybrid quantum device, that is ubiquitous in modern quantum information studies.</p>
Field of the dissertation	Applied Physics, Quantum Phenomena and Devices
Doctoral candidate	Jorden Senior, MPhys(hons)
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Place of the defence	Aalto University School of Science, lecture hall M1, Otakaari 1, Espoo
Opponent	Professor Jens Koch, Northwestern University, United States of America
Custos	Professor Jukka P. Pekola, Aalto University School of Science, Department of Applied Physics
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