

# **Antonio Mandarino**

Institute Utinam, Université Franche-Comté

## **Thermal transistor effect in quantum systems**

We study a quantum system composed of three interacting subsystems coupled to a different thermal reservoir each, and we show how to engineer it in order to build a quantum device that is analogous to an electronic bipolar transistor. In particular we address the ability to control the thermal currents at the emitter and collector imposing a non-varying thermal current at the base. Specifically, focusing on a system of three qubits we outline how the interaction among them plays a crucial role for the appearance of the effect, also linking it to the characteristics of system-bath interaction that governs the decoherence and dissipation mechanism of the system.