Many-body effects in quantum engines

Jennifer Koch[1], Keerthy Menon[2], Eloisa Cuestas[2], Thomas Fogarty[2], Sian Barbosa[1], Eric Lutz[3], Thomas Busch[2], and Artur Widera[1]

[1]*Department of Physics, Technische Universität Kaiserslautern, 67663 Kaiserslautern*
[2]*OIST Graduate University, Onna, Okinawa 904-0495, Japan*
[3]*Institute for Theoretical Physics I, University of Stuttgart, D-70550 Stuttgart, Germany*

Heat engines play a central role in our modern life, converting heat energy to motion. In recent years, the question of quantum contributions to the operation of microscopic heat engines has attracted increasing attention. In my talk, I will report on our combined experimental and theoretical efforts to identify genuine quantum effects in the operation of engines, using an ultracold gas of fermionic Lithium atoms.