# Two-qubit engine fueled by entanglement and local measurements

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We introduce a two-qubit engine that is powered by entanglement and local measurements. Energy is extracted from the detuned qubits coherently exchanging a single excitation. Generalizing to an N-qubit chain, we show that the low energy of the first qubit can be up-converted to an arbitrarily high energy at the last qubit by successive neighbor swap operations and local measurements. We finally model the local measurement as the entanglement of a qubit with a meter, and we identify the fuel as the energetic cost to erase the correlations between the qubits. Our findings extend measurement-powered engines to composite working substances and provide a microscopic interpretation of the fueling mechanism.

[1] L. Bresque et al, PHYSICAL REVIEW LETTERS 126, 120605 (2021)