

July 7, 2025 Scientists have finally uncovered a quantum counterpart to Carnot's famed second law, showing that entanglement--once thought stubbornly irreversible--can be shuffled back ...

In addition, generalising the concept of an entanglement battery to a resource battery - an additional quantum system that participates in the transformation process without reducing the ...

Quantum battery (QB) is a conceptually new energy storage and conversion device, which consists usually of a quantum charger and an energy store (called usually as the QB for ...

Abstract A scheme for implementing quantum batteries in a realizable and controllable platform based on a trapped ion chain driven by a mechanical oscillator is proposed. The effects of the ...

In this Letter, we show that arbitrary mixed state entanglement transformations can be made reversible under local operations and classical communication, when assisted by an ...

Quantum battery has become one of the hot issues at the research frontiers of quantum physics recently. Charging power, extractable work and wireless charging over long-distance are three ...

The demonstrated advantage of QB, over its classical counterpart, is that its charging efficiency can be significantly enhanced by using quantum entanglement resources. In this letter, we ...

Quantum batteries have demonstrated remarkable charging properties, showing that a quantum advantage is possible in the realm of quantum thermodynamics. However, finding an effective ...

A theoretical scheme for the design of an atomic quantum battery is proposed. It is shown that the optimal charging performance is achieved when the dipole moment is parallel to the interatomic axis,...

"This research area originated from quantum information theory, which predicts that quantum resources--such as entanglement--can dramatically enhance the charging power of quantum ...

We propose a physical model of a moving quantum battery composed of Heisenberg XXZ interacting atoms in a leaky cavity. By employing the open quantum system method, we ...

Just over 200 years after French engineer and physicist Sadi Carnot formulated the second law of thermodynamics, an international team of researchers has unveiled an analogous law for the ...



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