

Micius Quantum Prizes for 2021

Quantum mechanics, discovered in the beginning of the last century, has been an enormously successful theory of the nature, and has led to the development of many of today's most widely used technologies that completely changed the landscape of our society. In past decades, profound progresses, made both in our understanding of exploiting quantum superposition and entanglement for new ways of information processing and in the experimental methods of coherent control and interaction of individual quantum particles, have given birth to an emerging field of quantum technologies, also known as the second quantum revolution, which pushed the first quantum revolution to beyond simply exploiting naturally occurring quantum effects. The second quantum revolution has been driving and enabling a new generation of classically impossible tasks ranging from unconditionally secure quantum communications, breathtakingly powerful quantum simulation and quantum computation, to extremely sensitive measurements.

To promote the second quantum revolution, a new science foundation, the "Micius Quantum Foundation" was established in 2018 thanks to generous donations from private entrepreneurs. This Foundation is named after *Micius*, an ancient Chinese philosopher who lived during the similar period as the Western philosopher Democritus. Micius strongly stood for peace, put forward the concept of "universal love", and performed original scientific works such as the pinhole experiment that proved light traveled straight. In his book, there contained some preliminary idea of Newton's first law of motion, which states: "The stop of motion is due to the opposing force... If there is no opposing force... the motion will never stop." Micius also held a belief that objects can be infinitely divided into small pieces, but there is a smallest fundamental unit for particles, a concept with coincidence to our modern quantum physics.

One important mission of the Micius Quantum Foundation is to establish the "Micius Quantum Prize" and recognize the scientists who have made outstanding contributions in the field of quantum communications, quantum simulation, quantum computation, and quantum metrology. The revenue of the Micius Quantum Foundation is distributed in the form of prizes. Each honoree will receive a prize of 1.25 million Chinese yuan (after tax about 150,000 US dollars) and a gold medal. The Micius Quantum Prize recognizes significant science advances ranging from early conceptual contributions to recent experimental breakthroughs.

The Micius Quantum Prize 2021 focuses on the observation of quantum effects in superconducting devices. The laureates this year are John Clarke, Michel H. Devoret, and Yasunobu Nakamura.

- John Clarke, University of California, Berkeley
- Michel H. Devoret, Yale University
- Yasunobu Nakamura, RIKEN

Citation: For their leading roles in pioneering superconducting quantum circuits and qubits

International Selection Committee (2021)

Chunli Bai, Charles H. Bennett, Yi Luo, Jian-Wei Pan, Frank Wilczek, David J. Wineland, Anton Zeilinger, and Peter Zoller

For more information please visit our official website at <http://miciusprize.org>.

Additional information

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