

Quantum Mechanics: from Fundamental Principles to Technological Revolutions

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In this talk I will present experimental properties of quantum light, as an illustration of the fundamental rules of quantum mechanics: superposition, interferences, and entanglement. Emphasis will be given to experimental tests of Bell's inequalities, that lead to the 2022 Nobel Prize in physics attributed to Aspect, Clauser and Zeilinger. This result opened the way to Quantum Technologies, and as an example I will present and discuss quantum simulators based on arrays of interacting trapped single atoms.