

Anton Zeilinger



Entangled Photons in the Large

The technology of entangled photons now allows quantum entanglement experiments over large distances and in higher dimensional Hilbert spaces. Recently, long-distance quantum teleportation between the Canary Islands of La Palma and Tenerife was realized over a distance of 143 km. Such experiments open up the possibility of quantum communication with satellites. In higher-dimensional Hilbert spaces, states with orbital angular momentum allow entanglement of very high quantum numbers and entanglements where each photon enjoys a more than 100-dimensional Hilbert space. Most recently, for Bell inequality experiments, the detection loophole was closed, which is an important step for secure quantum communication.

Anton Zeilinger is Professor of Experimental Physics Emeritus at the University of Vienna and Senior Scientist at the Institute of Quantum Optics and Quantum Information of the Austrian Academy of Sciences. His awards include the King Faisal Prize, the Wolf Prize, the Inaugural Newton Medal of the Institute of Physics (UK), and the German and Austrian Orders of Merit. Professor Zeilinger is a Fellow of the American Physical Society and of AAAS. His Academy memberships include the Austrian Academy of Sciences, the German National Academy Leopoldina, and the Académie des Sciences Paris. Recently, he was elected Foreign Associate of the U.S. National Academy of Sciences.

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