



# CERN Colloquium

SPEAKER: Anton Zeilinger (University of Vienna & Austrian Academy of Sciences)

TITLE: **From John Bell at CERN to Quantum Communication and Quantum Computation.**

DATE: Tue 02/09/2014 16:30

PLACE: Main Auditorium

## ABSTRACT

Bell's Theorem, discovered by him when he was working at CERN in the 1960s says that certain correlations between entangled quantum states violate an inequality, now named after him. Initially this was just seen as a conflict of a classical, local, realistic world view with quantum mechanics. But Bell's work triggered an enormous experimental and theoretical activity which provided the basis for quantum communication and quantum computation.

Today, violation of his Bell's Inequality is so standard in many laboratories world wide that it has become an important criterion for the quality of entangled states created. In the talk I will reflect on the current status and future prospects of experiments, focusing on long-distance quantum entanglement and quantum communication.

Finally I will also present a very recent experiment on quantum imaging.