CERN Colloquium

SPEAKER: Renato Renner

TITLE: **Quantum Information and the Foundations of Quantum Physics**

DATE: 14 Nov 2019, 16:30

PLACE: 500/1-001 - Main Auditorium

ABSTRACT

The recent developments in quantum information and computation are not only of interest for applications — they also provide a novel perspective on the foundations of quantum physics. Of particular interest are quantum computers, as they can take two different roles. On the one hand, a computer can act as a “subject that uses quantum theory”, i.e., it can be programmed with the laws of quantum physics to compute predictions. On the other hand, a quantum computer must itself obey these very laws, and is thus also an “object described by quantum theory”. One may now ask whether these two roles are compatible with each other, or, more concretely, whether quantum theory is capable of describing information-processing devices that are themselves using the theory. In my talk, I will explain how information-theoretic considerations like this one can lead to surprising insights on the fundamental structure of our best available physical theories.

Organised by: W. Lerche/TH-SP.....** Tea and coffee will be served at 16h00**