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Quantum jumps, quantum trajectories and the Copenhagen interpretation

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From the early days of quantum mechanics, leading physicists were concerned about the role played by probabilities, the discontinuous nature of quantum jumps and the collapse of the state of quantum systems subject to measurement. While the evolution of a single localized quantum system already raises the most fundamental questions about the meaning of the theory, correlation measurements on entangled states of several particles made it possible to address these questions and put different interpretations to test in a quantitative manner.
In this talk, I shall consider continuous or repeated measurements on a single quantum system. A recent extension of the quantum state formalism describes what is known by an observer about a system at time t, if she has monitored the system over times both before and after t. This extension draws attention to questions that were not considered in detail in the past, and I shall address how they relate to and illuminate conceptual ideas and quantitative aspects of the Copenhagen (and QuBism) interpretation.

Presenter: MOLMER, Klaus (University off Aarhus)

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