



Quantum Efficiency Seminar und Colloquium

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Quantum tomography for image processing

Quantum information technologies have recorded enormous progress within the recent fifteen years. They have developed from the early stage of thought experiments into nowadays almost ready-to-use technology. The quantum state is not an observable and as such it cannot be measured in the traditional sense. Information encoded in a quantum state may be portrayed by various ways yielding the most complete and detailed picture of the quantum object available.

The reconstruction based on the Maximum Likelihood estimation will be explained showing the connection with the information concepts in mathematical statistics. MaxLik tomography will be illustrated on the examples in optics: parameter estimation and wave front detection yielding an ultimate information about the system. Image processing motivated by protocols of quantum information protocols could also be applied to such speculative questions like a vision of insect with compound eye or investigation of possible coherence in cosmic background radiation.

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