QSIT 2009 - Questions 4

15. Oktober 2009

1. **Quantum State Tomography.**

   To determine the state of a quantum system a specific number of measurements have to be performed on identically prepared systems. From the results of such a complete set of measurements the state can then be fully characterized.

   - How many measurements do you need to determine the quantum state of the system?
   - Write down expliclitly, what measurements can be used and how you can infer the state from the results of these measurements.
   - How is the number of required measurements connected to the normalization of the state? And what does it mean, if the state is found to be not normalized?