February 6-10,2023: Quantum Computing, Quantum Machine Learning and Quantum Information Theories

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Spectral Decomposition, Measurements and Density matrices

1. Density matrices and Measurements
2. Video of lecture

- Teaching material in different formats
- **Reading recommendation**: Scherrer, Mathematics of Quantum Computations, chapters 2 and 3

Introduction

In order to study entanglement and why it is so important for quantum computing, we need to introduce some basic measures and useful quantities. For these endeavors, we will use our two-qubit system from the previous lecture in order to introduce, through examples, density matrices and entropy.

Basic properties of hermitian operators

Spectral Decomposition.

Measurements

Density matrices/operators