Basic Concepts for Quantum Computing and Cryptography (Unit 2)

UNIT

Abhishek Parakh - October 21, 2018

Outcomes

Apply and Analyze

Students will be able to apply vector and ket representations of quantum states.

Apply and Analyze

Students will be able to apply single and multi qubit gates.

Apply and Analyze

Students will be able to apply the concepts of single-qubit measurement.

Evaluate and Synthesize

Students will be able to conclude the results of the measurement of a qubit and compute the transition amplitudes.

Apply and Analyze

Students will be able to construct joint representations for multiple qubits.

Apply and Analyze

Students will be able to calculate the effects of partial measurements on joint quantum states.

Remember and Understand

Students will be able to recall EPR paradox and the CHSH game.

Remember and Understand

Students will be able to summarize the concept of probabilistic systems and model quantum states.

Remember and Understand

Students will be able to recall Bloch sphere representation of a qubit.

Remember and Understand

Students will be able to recall physical manifestation of quantum states.

Evaluate and Synthesize

Students will be able to change between basis representations for a given qubit.

Evaluate and Synthesize

Students will be able to build circuits to implement quantum algorithms.