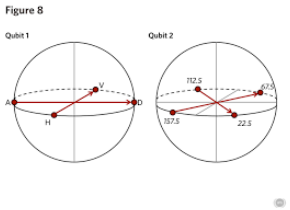
Quantum Lecture 3

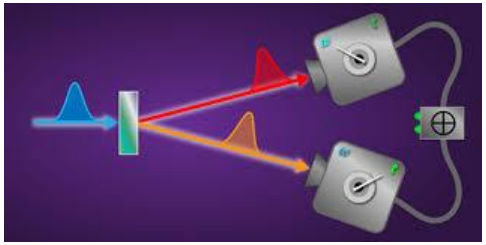


<Bra| – |Ket> Notation

Two Qubits

Entanglement

EPR Paradox



Agenda for Lecture 3

- 8:30 – 9:00 RECAP
- 9:15 – 10:00 2 Videos
- 10:15 – 11:00 Coderanch
- 11:00 – 11:45 2 Videos
- 11:45 – 12:30 Lunch
- 12:30 – 13:15 MatLab
- 13:30 – 14:00 Coderanch

8:30 – 9:00 RECAP

- Kahoot https://create.kahoot.it/details/9783af2c-32f6-4e4a-8d8d-de90f223a50e
- Your Report of Your Own choice
- The Qubit
- The Vector Space and the basis
- Inner products
- Geometrical Representation
- Heisenbergs Uncertainty Principle

9:15 – 10:00 2 Videos

- Lecture 3.1 Bra-Ket Notation

- Lecture 3.2 Two Qubits

10:15 – 11:00 Coderanch

- Start with the mybinder.org below
- https://hub.gke.mybinder.org/user/gubiithefish-ib-ands-on-session-fzvbsbtj/notebooks/notebook-exercises/1.0%20-%20Introduction.ipynb

1. **10:15 -> Exercise 1 -** The HelloWorld
2. **10:30 -> Exercise 2 - [x]-gate operation on Qubit**
3. **10:45 ->Exercise 3 - [H]-gate operation on Qubit**

11:00 – 11:45 2 Videos

- Entanglement

- EPR Paradox

11:45 – 12:30 Lunch

12:30 – 13:15 MatLab

- Exercise 2.1 – Page 36
- Exercise 2.2 – Page 36
- Exercise 2.3 – Page 36
- Exercise 2.4 – Page 36
- Example 3.1– Page 41
- Example 3.2– Page 44
- Example 3.3– Page 45
- Example 3.4– Page 47

13:30 – 14:00 Coderanch

- Continues with the mybinder.org below
- https://hub.gke.mybinder.org/user/gubiithefish-ib-ands-on-session-fzvbsbtj/notebooks/notebook-exercises/1.4%20-%20Gate%20operation%20-%20CNOT-Gate.ipynb

- **13:30 -> Exercise 4 - [C-NOT]-gate operation on Qubit**
- **13:45 -> Exercise 5 - Code on a quantum computer with cloud platform IBM Q**
- **14:00 -> Lecture 3 ends for today**