## <u>Ideal Vector Comparisons</u>

- \* Had a tensoring issue in the simulations
- \* And neural networks wouldn't behave so am keeping these here for comparison in case anything else goes kerplow

## P(anc == |0>) per starting basis state

### **GHZ**

IBM noiseless sim: ~ [0.75005, 0.50315, 0.49956, 0.50012]

Python sim: [0.7500, 0.5, 0.5, 0.5]

#### W-State

IBM noiseless sim: ~ [0.90459, 0.57078, 0.8069, 0.5504]

Python sim: [0.9059, 0.5696, 0.8053, 0.5523]

#### Adder # still has issues somewhere??

IBM noiseless sim: ~ [1.0, 0.49478, 0.49862, 0.62474]

Python sim: [1.000, 0.6250, 0.5, 0.6250]

# Repeater

IBM noiseless sim: ~ [0.62438, 0.62329, 0.50156, 0.50038]

Python sim: [0.6250, 0.6250, 0.5, 0.5]

## Teleportation

IBM noiseless sim: ~ [0.56322, 0.56016, 0.56018, 0.56141]

Python sim: [0.5625, 0.5625, 0.5625]

#### Deutsch-Jozsa

IBM noiseless sim :~ [0.75117, 0.74798, 0.74982, 0.74855]

Python sim: [0.7500, 0.7500, 0.7500, 0.7500]

## Probabilities counts for {[Hadamard] | 111..>}

### GHZ

IBM noiseless sim:  $\sim$  [0.0, 0.12526, 0.0, 0.12468, 0.0, 0.12626, 0.0, 0.12372, 0.0, 0.12463, 0.0, 0.12516, 0.0, 0.12386, 0.0, 0.12643]

Python sim: [0.0, 0.1250, 0.0, 0.1250, 0.0, 0.1250, 0.0, 0.1250, 0.0, 0.1250, 0.0, 0.1250, 0.0, 0.1250, 0.0, 0.1250]

## W-State

IBM noiseless sim:  $\sim [0.08317, 0.16692, 0.24394, 0.00706, 0.08368, 0.16577, 0.24289, 0.00657]$ 

Python sim: [0.0833, 0.1666, 0.2428, 0.0071, 0.0833, 0.1666, 0.2428, 0.0071]

#### Adder

IBM noiseless sim:  $\sim$  [0.0311, 0.0318, 0.03076, 0.03173, 0.03169, 0.03101, 0.03117, 0.03127, 0.03071, 0.03077, 0.03193, 0.03145, 0.0314, 0.03097, 0.03117, 0.0309, 0.03056, 0.03079, 0.03148, 0.03197, 0.03082, 0.03102, 0.03167, 0.03177, 0.03229, 0.03122, 0.03118, 0.03106, 0.03139, 0.03048, 0.03141, 0.03106]

Python sim: [0.03125000000000035, 0.03125000000000035, 0.03125000000000035, 0.03125000000000035,

0.03125000000000035, 0.03125000000000035, 0.03125000000000035, 0.0312500000000035,

0.0312500000000004, 0.0312500000000004, 0.0312500000000004, 0.03125000000000004, 0.03125000000000035,

0.03125000000000035, 0.03125000000000035, 0.03125000000000035, 0.0312500000000035,

0.03125000000000035, 0.03125000000000035, 0.03125000000000035, 0.0312500000000035,

0.03125000000000035, 0.03125000000000035, 0.03125000000000035, 0.0312500000000004,

## Repeater

 $IBM \ noiseless \ sim: \\ \sim [0.0, \ 0.0, \ 0.0, \ 0.0, \ 0.0, \ 0.0, \ 0.0, \ 0.0, \ 0.0, \ 0.25045, \ 0.25134, \ 0.24965, \ 0.0, \ 0.0]$ 

## Teleportation

IBM noiseless sim: ~ [0.25115, 0.25063, 0.0, 0.0, 0.25165, 0.24657, 0.0, 0.0]

Python sim: [0.2500, 0.2500 0.0, 0.0, 0.2500, 0.2500, 0.0, 0.0]

## **Deutsch-Jozsa**