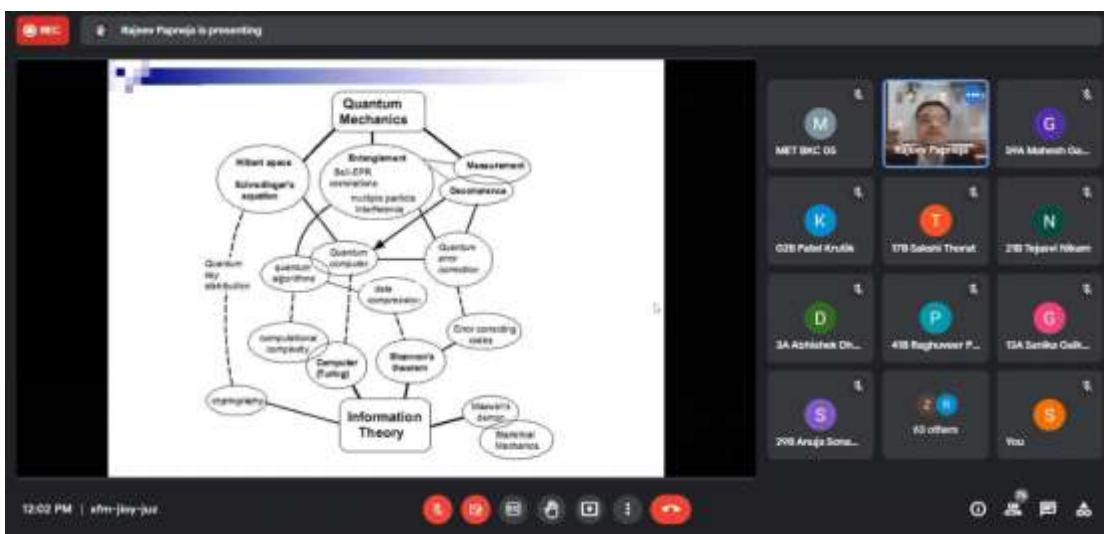
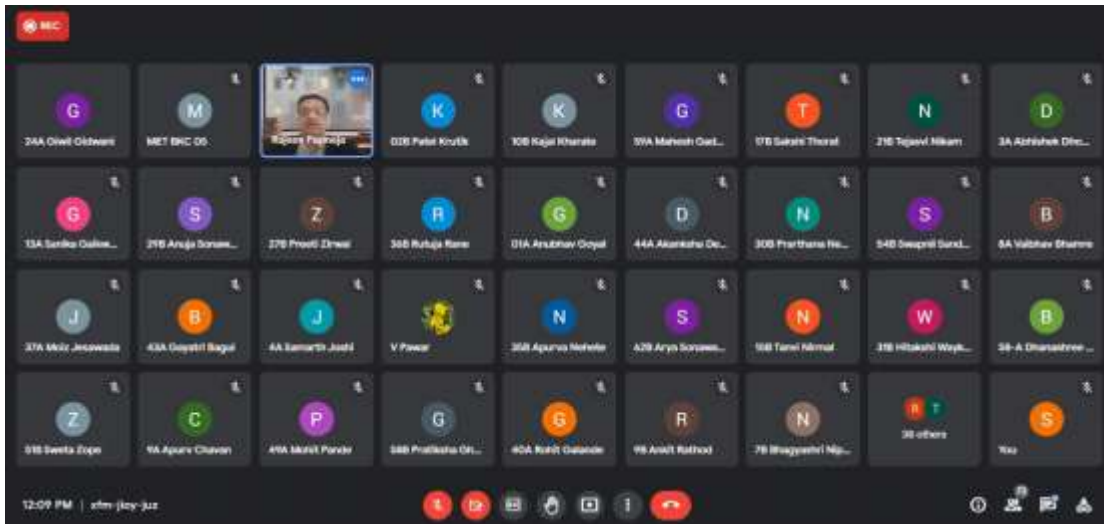


MET's Institute of Engineering
Department of Computer Engineering
BE Audit Course 6-III
Quantum Computing

Event Date: 26th to 27th March 2022



REC Bajwan Papreja is presenting

Shor's Algorithm

*Shor's algorithm shows (in principle,) that a quantum computer is capable of factoring very large numbers in polynomial time.

The algorithm is dependant on

- *Modular Arithmetic
- *Quantum Parallelism
- *Quantum Fourier Transform

11:51 AM | xfm-joy-jus

REC Bajwan Papreja is presenting

NOT

A	A
0	1
1	0

PAULI X GATE

A⟩	X⟩
0	1
1	0

Dirac notation

$$|X\rangle = \frac{1}{\sqrt{2}} (|1\rangle - |0\rangle) = |0\rangle$$

11:48 AM | xfm-joy-jus

REC Rajeev Papatia is presenting

Pauli-Y gate

Acts on a single qubit

Dirac notation: $|0\rangle \rightarrow i|1\rangle, |1\rangle \rightarrow -i|0\rangle$

Matrix representation: $Y = \begin{bmatrix} 0 & -i \\ i & 0 \end{bmatrix}$

Circuit representation:

Not gate with i multiple ... multi-gate with its classical equivalent

Pauli-Z gate

Acts on a single qubit

Dirac notation: $|0\rangle \rightarrow |0\rangle, |1\rangle \rightarrow -|1\rangle$

Matrix representation: $Z = \begin{bmatrix} 1 & 0 \\ 0 & -1 \end{bmatrix}$

Circuit representation:

Flips sign of second entangled state

11:41 AM | xfm-joy-jus

Participants: T, K, G, A, P, L, T, N, D, R, S

REC Rajeev Papatia is presenting

11:16 AM | xfm-joy-jus

Participants: T, K, G, L, T, N, S

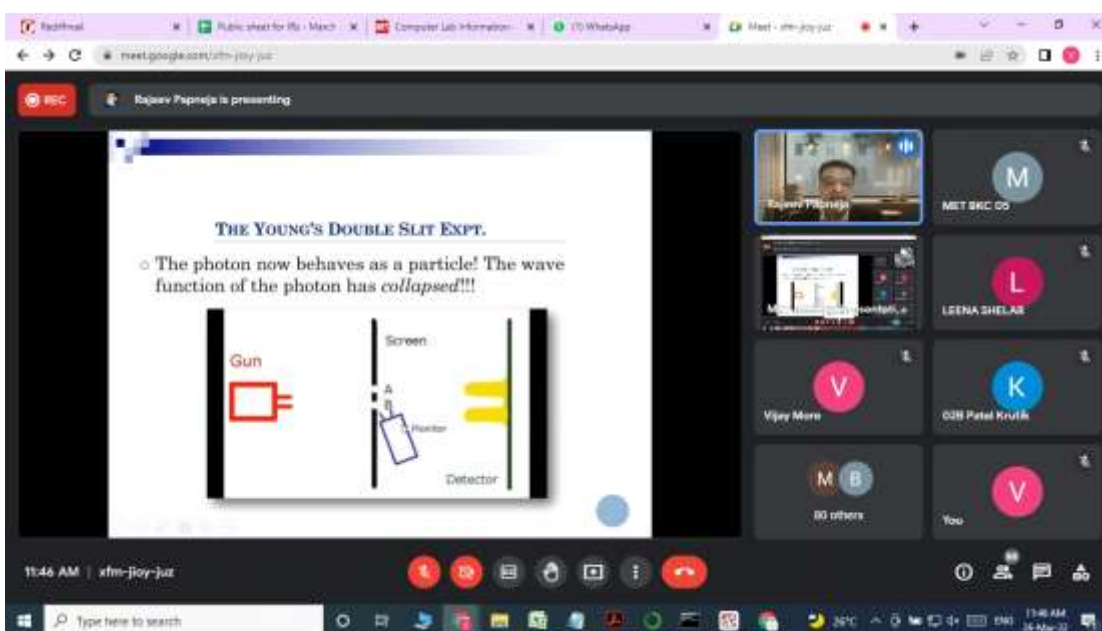
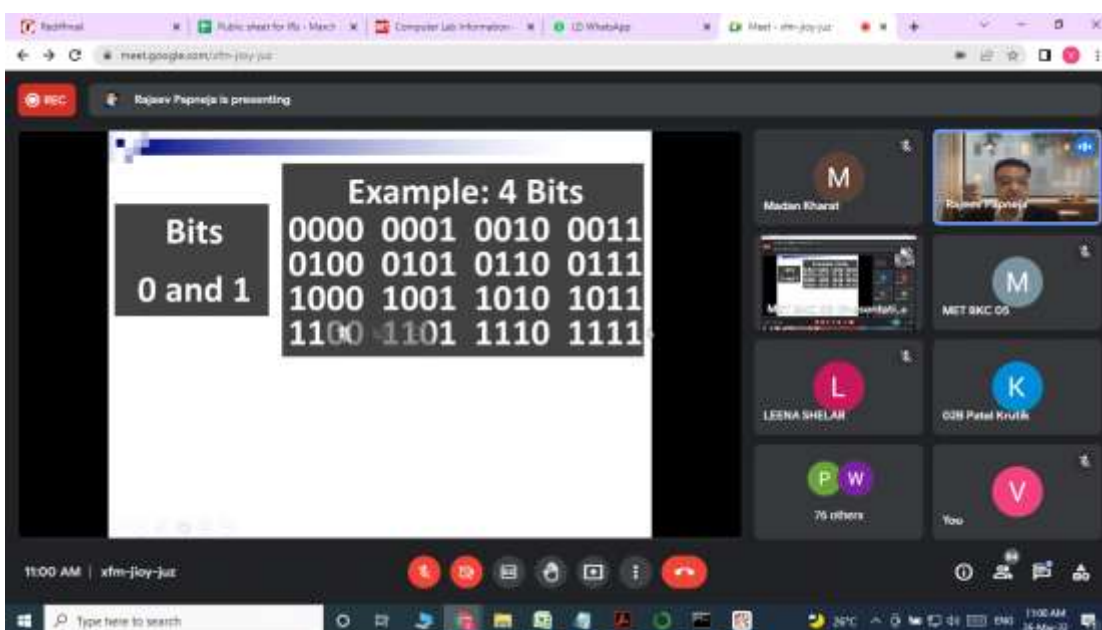
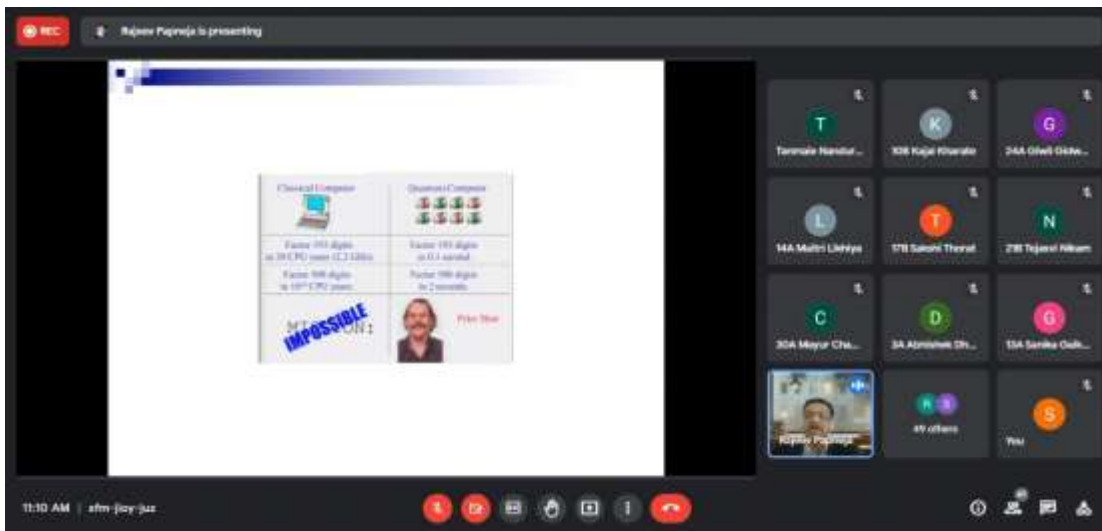
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- R 118 Sarika Chakraborty
- L 104 Mantri Lakshya
- S 108 Gaurav Upadhyay




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Rajeev Papreja is presenting

Power of Scaling 2ⁿ



Square	Grains on the Square	Total Grains on the Whole Board
1	1	1
2	2	3 (or 2 ² minus 1)
3	4 (2 + 2 or 2 ²)	7 (or 2 ³ minus 1)
4	8 (4 + 4 or 2 x 2 ²)	15 (or 2 ⁴ minus 1)
5	16 (8 + 8 or 2 x 2 ³)	31 (or 2 ⁵ minus 1)
6	32 (2 x 2 x 2 x 2 or 2 ⁴)	63 (or 2 ⁶ minus 1)
7	64 (2 x 2 x 2 x 2 x 2 or 2 ⁵)	127 (or 2 ⁷ minus 1)
8	128 (2 ⁷)	255 (or 2 ⁸ minus 1)
9	256 (2 ⁸)	511 (or 2 ⁹ minus 1)
10	512 (2 ⁹)	1,023 (or 2 ¹⁰ minus 1)
11	1,024 (2 ¹⁰)	2,047 (or 2 ¹¹ minus 1)
12	2,048 (2 ¹¹)	4,095 (or 2 ¹² minus 1)
13	4,096 (2 ¹²)	8,191 (or 2 ¹³ minus 1)
14	8,192 (2 ¹³)	16,383 (or 2 ¹⁴ minus 1)
15	16,384 (2 ¹⁴)	32,767 (or 2 ¹⁵ minus 1)
16	32,768 (2 ¹⁵)	65,535 (or 2 ¹⁶ minus 1)
17	65,536 (2 ¹⁶)	131,071 (or 2 ¹⁷ minus 1)
18	131,072 (2 ¹⁷)	262,143 (or 2 ¹⁸ minus 1)
19	262,144 (2 ¹⁸)	524,287 (or 2 ¹⁹ minus 1)
20	524,288 (2 ¹⁹)	1,048,575 (or 2 ²⁰ minus 1)
21	1,048,576 (2 ²⁰)	2,097,151 (or 2 ²¹ minus 1)
22	2,097,152 (2 ²¹)	4,194,303 (or 2 ²² minus 1)
23	4,194,304 (2 ²²)	8,388,607 (or 2 ²³ minus 1)
24	8,388,608 (2 ²³)	16,777,215 (or 2 ²⁴ minus 1)
25	16,777,216 (2 ²⁴)	33,554,431 (or 2 ²⁵ minus 1)
26	33,554,432 (2 ²⁵)	67,108,863 (or 2 ²⁶ minus 1)
27	67,108,864 (2 ²⁶)	134,217,727 (or 2 ²⁷ minus 1)
28	134,217,728 (2 ²⁷)	268,435,455 (or 2 ²⁸ minus 1)
29	268,435,456 (2 ²⁸)	536,870,911 (or 2 ²⁹ minus 1)
30	536,870,912 (2 ²⁹)	1,073,741,823 (or 2 ³⁰ minus 1)
31	1,073,741,824 (2 ³⁰)	2,147,483,647 (or 2 ³¹ minus 1)
32	2,147,483,648 (2 ³¹)	4,294,967,295 (or 2 ³² minus 1)

11:54 AM | xfm-joy-juz

15°C

11:54 AM
16-Mar-22