



HANSRAJ COLLEGE

University Of Delhi

NAAC Grade A++ with CGPA 3.71

NIRF Rank # 12 (Amongst Colleges)

(2023-2024)



हंसराज कॉलेज
— दिल्ली विश्वविद्यालय —

Report: Webinar on "Journey into the Future: Ion Trap Technology's Role in Quantum Computing"

Date: 11th May 2024

Organized by: Institution's Innovation Council (IIC), Hansraj College, University of Delhi

Objective: To celebrate National Technology Day and delve into the advancements and implications of Ion Trap Technology in the realm of Quantum Computing.

Invited Speaker: Dr. Sugam Kumar, Scientist, Inter-University Accelerator Centre (IUAC), New Delhi

Coordinators:

Mr. Suyash Kumar, Event Coordinator, HRC, DU

Dr. Pratibha Tiwari, Innovation Coordinator, HRC, DU

Dr. Jnaneswari Gellanki, Convenor - Women's Development Cell (WDC), HRC, DU

Dr. Ambika, Convenor - Institution's Innovation Council (IIC), HRC, DU

Prof. (Dr.) Rama, Principal, HRC, DU

INSTITUTION'S INNOVATION COUNCIL (IIC)
Hansraj College , University of Delhi
 Organizes a
 Webinar on
"Journey into the Future: Ion Trap Technology's Role in Quantum Computing"
To Celebrate
National Technology Day

Date:- 11/05/2024
Time:- 11:00 AM onwards
Google Meet joining link:
<https://meet.google.com/qve-vihh-duk>

Invited Speaker
Dr. Sugam Kumar
 Scientist
 Inter-University Accelerator Centre
 (IUAC), New Delhi,

Prof.(Dr.) Rama
 Principal
 HRC, DU

Mr. Suyash Kumar
 (Event Coordinator)
 HRC, DU

Dr. Pratibha Tiwari
 (Innovation Coordinator)
 HRC, DU

Dr. Jnaneswari Gellanki
 Convenor- WDC
 HRC, DU

Dr. Ambika
 Convenor- IIC,
 HRC, DU

Overview:

The webinar, organized by the Institution's Innovation Council (IIC) at Hansraj College, University of Delhi, marked the celebration of National Technology Day. The event aimed to explore the cutting-edge advancements in Ion Trap Technology and its pivotal role in shaping the landscape of Quantum Computing.

Highlights:

Keynote Address by Dr. Sugam Kumar: Dr. Sugam Kumar, a distinguished Scientist from IUAC, New Delhi, delivered an insightful keynote address, elucidating the significance of Ion Trap Technology and its transformative impact on Quantum Computing. Dr. Kumar shared his expertise and provided valuable insights into the future trajectory of this burgeoning field.

In the landscape of quantum computing, ion trap technology stands out as a beacon of promise for realizing the transformative potential of quantum computing. Ion traps offer unparalleled advantages in terms of qubit coherence, gate fidelity, and scalability, making them a frontrunner in the race towards practical quantum computers. Through precise control of individual ions using electromagnetic fields, ion trap systems enable the manipulation and entanglement of qubits with unprecedented precision and fidelity.

In contrast to existing quantum computing technologies, such as superconducting qubits and silicon-based quantum dots, ion trap technology boasts longer qubit coherence times and superior gate performance, laying the foundation for robust and error-resistant quantum computation.

Moreover, with the recent launch of the Indian National Quantum Mission, there is renewed momentum and emphasis on advancing quantum technologies, including ion trap-based quantum computing, in India. This mission aims to propel India to the forefront of the global quantum computing race and foster collaborations between academia, industry, and government agencies.

Panel Discussion: Following the keynote address, a panel discussion was conducted, moderated by Dr. Ambika, Convenor of the Institution's Innovation Council (IIC) at HRC, DU. The panelists engaged in an enriching discourse, delving into various facets of Ion Trap Technology, its applications, challenges, and potential avenues for further research and development.

Interactive Q&A Session: The webinar featured an interactive Q&A session, allowing participants to engage directly with the esteemed speaker and panelists. Attendees had the opportunity to pose queries, seek clarifications, and gain deeper insights into the nuances of Ion Trap Technology and its implications for Quantum Computing.

Conclusion:

The webinar on "Journey into the Future: Ion Trap Technology's Role in Quantum Computing" proved to be an enlightening and intellectually stimulating event, providing participants with a comprehensive understanding of this cutting-edge technology. Through insightful discussions and expert insights, the webinar contributed significantly to fostering awareness and fostering dialogue in the burgeoning field of Quantum Computing. In this talk, we have explored the potential of ion trap technology as the future of quantum computing, highlighting its advantages over existing technologies and its alignment with the objectives of the National Quantum Mission.

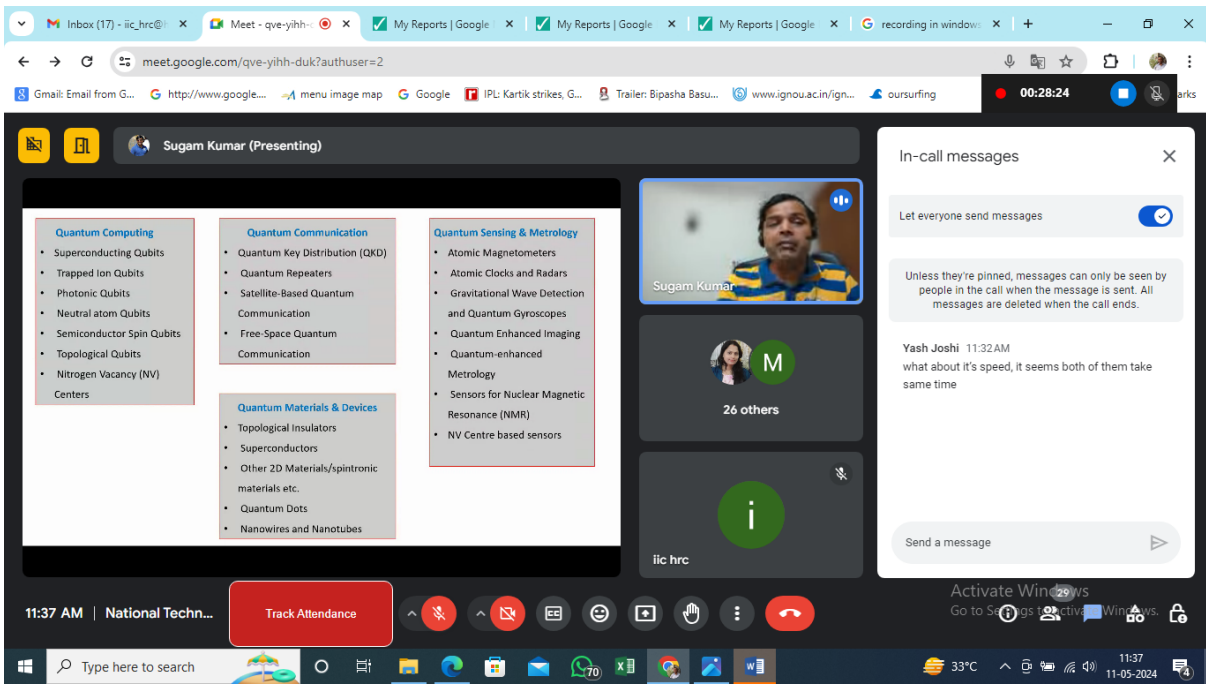
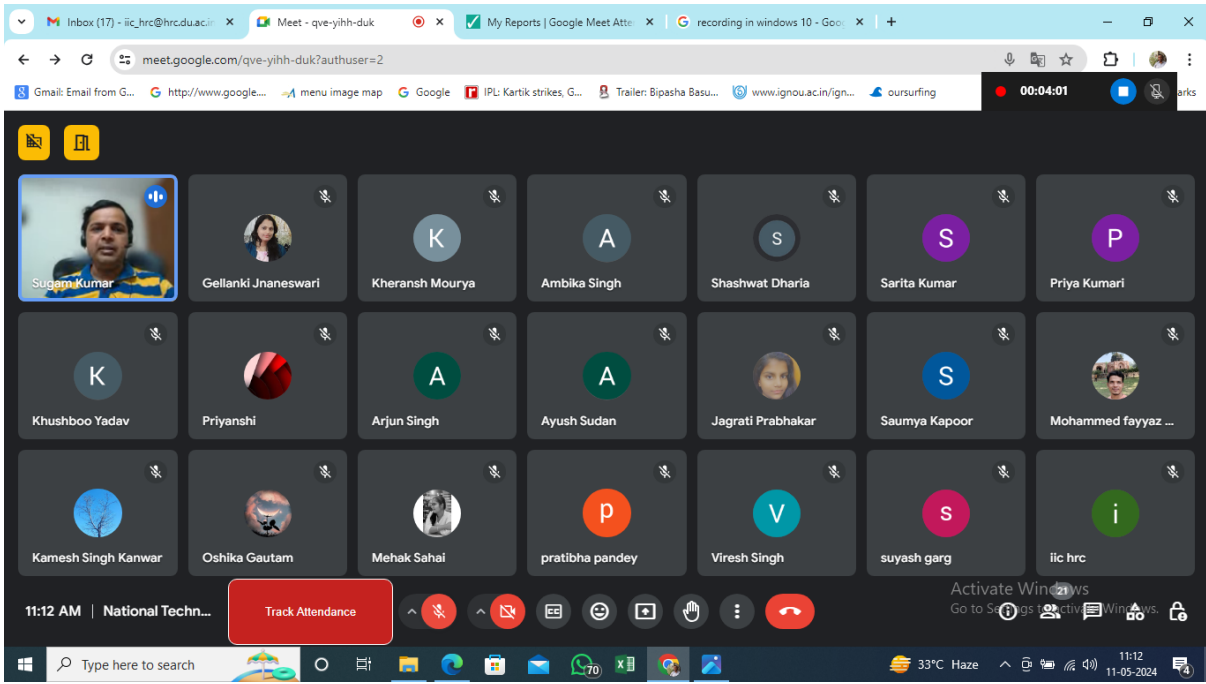
Acknowledgments:

The organizers extend their sincere gratitude to Dr. Sugam Kumar for sharing his expertise and insights. Special thanks are also due to all the event coordinators, panelists, and participants for their valuable contributions and active participation, making the webinar a resounding success.

Future Endeavors:

The success of this webinar underscores the importance of continued exploration and discourse on emerging technologies. The Institution's Innovation Council (IIC) at Hansraj College, University of Delhi, remains committed to organizing similar events in the future, facilitating knowledge exchange and fostering innovation in the academic community.

Video Link of program (If any):- <https://youtu.be/V6GWQgcG2jc>



meet.google.com/qve-yihh-duk?authuser=2

Sugam Kumar (Presenting)

Classical Bits

Logic Gates:

- A logic gate is usually a simple operation acting on two bits in input and output one bit.
- Seven basic logic gates exist OR, XOR, NOR, XNOR, AND, NAND, and NOT

Arithmetic Operation with Logic Gates

Full Adder

Inputs	Outputs			
A	B	C _{in}	S	C _{out}
0	0	0	0	0
0	0	1	1	0
0	1	0	1	0
0	1	1	0	1
1	0	0	1	0
1	0	1	0	1
1	1	0	0	1
1	1	1	1	1

NOT Gate

A	Y
0	1
1	0

NAND Gate

Universal Gate

11:43 AM | National Techn... | Track Attendance

Activate Windows
Go to Settings to activate Windows.

33°C | 11:43 | 11-05-2024

SNo	Participant Name
1	ABHISHEK GOYAL
2	AMBIKA SINGH
3	ARJUN SINGH
4	CHANCHAL YADAV
5	DR. NEETU AGRAWAL
6	DR. SANDEEP KUMAR
7	GELLANKI JNANESWARI
8	IIC HRC
9	ISHIKA KHANNA
10	JAGRATI PRABHAKAR
11	KAKUL
12	KHERANSH MOURYA
13	KHUSH SHAW (13945)
14	KHUSHBOO YADAV
15	MAHESH YADAV
16	MEHAK SAHAI
17	MONIKA KOUL
18	NIKITA TYAGI
19	NINAD SAVANT
20	POONAM DAHIYA
21	PRATIBHA PANDEY
22	PRIYA KUMARI
23	SAMEER KUMAR
24	SARITA KUMAR
25	SHASHWAT DHARIA
26	SUGAM KUMAR
27	SUYASH GARG

- 28 TEJAS SAHAY
- 29 VIKALP SHARMA
- 30 VIRESH SINGH
- 31 YUG SHAH