

Mini Workshop on Quantum Computing
(14th- 16th November 2022, JNCASR)

Program Schedule

14th November 2022, Monday

Speaker	Time	Venue	Title
Prof. K. B. Sinha	11:00 AM	Main Building Lecture Hall	An Introduction to Quantum Theory of Computing and Learning - Part 1
Dr.Rukhsan-ul-Haq	2 PM	CCMS classroom	Hands-on Introduction to quantum computing on IBM Quantum Computers

15th November 2022, Tuesday

Speaker	Time	Venue	Title
Prof. K. B. Sinha	11:00 AM	Kanada Auditorium	An Introduction to Quantum Theory of Computing and Learning - Part 2
Dr.Rukhsan-ul-Haq	2 PM	CCMS classroom	Hands-on Introduction to quantum computing on IBM Quantum Computers

16th November 2022, Wednesday

Speaker	Time	Venue	Title
Prof. K. B. Sinha	11:00 AM	Main Building Lecture Hall	An Introduction to Quantum Theory of Computing and Learning - Part 3
Dr.Rukhsan-ul-Haq	2 PM	CCMS classroom	Hands-on Introduction to quantum computing on IBM Quantum Computers

Topics to be covered by Prof.K.B.Sinha: (Talks 1 and 2) Rapid Introduction to FDQM (finite-dimensional Q.M.) - states and observables; Compound-systems: factorizable and entangled states --examples; No-Cloning and Cloning results; A few tools of Quantum Computing (QComp) / Quantum Learning Theory (QMLT), the Gates. **(Talk 3)** Grover's Algorithm as an example of Algorithmic Learning; Brief Comments on Statistical Learning - Classical and Quantum.

Reference: Quantum Computation, A Gentle Introduction, by E. Reiffel and W. Polak, MIT Press, 2011.

Desirable prerequisites: Quantum Mechanics, Linear algebra, Probability theory, Python