



QuanTalks

IISc Quantum Technologies Initiative (IQTI)
Seminar Series



Title: Quantum computing at the IBM Quantum Hub at the University of Melbourne

Speaker: Prof. Lloyd C.L. Hollenberg,
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Abstract: After decades of fundamental theoretical and experimental research, programmable quantum computer devices have arrived. State-of-the-art Noisy Intermediate Scale Quantum (NISQ) systems have now exceeded the 100 qubit level [research.ibm.com/blog/127-qubit-quantum-processor-eagle] and are soon expected to reach well beyond. In this talk, I will summarise recent work coming out the IBM Quantum Hub at The University of Melbourne since its establishment in 2018, spanning device characterisation, large-scale entanglement, machine learning, and application areas. Attention will be focussed on the quantum computed moments (QCM) framework we have developed, based on Lanczos expansion theory and the quantum computation of Hamiltonian moments, and its application on NISQ devices to ground-state energy problems in magnetism and chemistry.

Date & Time
Wednesday,
24th November 2021
9:30 AM IST



Meeting Link
Click here to join the Webinar

Biography: Professor Hollenberg is a Melbourne Laureate Professor and the Thomas Baker Chair in the School of Physics at the University of Melbourne. He completed his PhD in 1989 in theoretical particle physics and in 1999 turned his attention to quantum computing. He is the Deputy Director of the Australian Research Council (ARC) Centre of Excellence for Quantum Computation and Communication Technology (2011-2024) and was awarded an ARC Laureate Fellowship in 2013. Lloyd's nearly two decades of work in quantum computing underpins the establishment of the IBM Quantum Hub at the University of Melbourne. He has published over 250 papers and is well known internationally for his work in quantum computing and the development of quantum sensing techniques at the quantum-nano-bio interface. Lloyd was awarded the 2012 Walter Boas Medal, the 2013 Victoria Prize (Physical Sciences), the 2016 Royal Society (Victoria) Medal for Excellence in Scientific Research and led the team that won the 2013 Eureka Prize for Excellence in Interdisciplinary Research. He was elected to the Australian Academy of Science in 2018.