ICTS Colloquium

Title : Superconducting circuits for quantum information processing

Speaker : Rajamani Vijayaraghavan, Tata Institute of Fundamental Research, Mumbai

Date : Monday, December 5, 2016

Time : 3:00 PM

Venue : Emmy Noether Seminar Room, ICTS Campus, Bangalore

Abstract : Storing and processing information using quantum two level systems (qubits) promises tremendous speed-up for certain computational tasks like prime factorisation and searching an unsorted database. In addition, many problems in quantum mechanics can also be solved a lot more efficiently. Scientist and engineers all over the world are trying to build the hardware that can implement these quantum algorithms. In this talk, I will present one particular approach which uses superconducting electrical circuits operating at millikelvin temperatures to implement the quantum hardware. This architecture uses weakly anharmonic electrical oscillators to implement qubits and uses microwave signals to control and manipulate them. I will provide an overview of the field and highlight the challenges ahead. Finally, I will highlight our efforts at TIFR in implementing novel multi-qubit systems using superconducting circuits.