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**Quantum simulations with noisy quantum computers**

JAY GAMBETTA, IBM T J Watson Res Ctr

Quantum computing is a new computational paradigm that is expected to lie beyond the standard model of computation. This implies a quantum computer can solve problems that can't be solved by a conventional computer with tractable overhead. To fully harness this power we need a universal fault-tolerant quantum computer. However the overhead in building such a machine is high and a full solution appears to be many years away. Nevertheless, we believe that we can build machines in the near term that cannot be emulated by a conventional computer. It is then interesting to ask what these can be used for. In this talk we will present our advances in simulating complex quantum systems with noisy quantum computers. We will show experimental implementations of this on some small quantum computers.