**Abstract:**

No process in nature can perfectly clone an arbitrary quantum state. This simple fact, known as the no-cloning theorem, is at the heart of many of the wonders of Quantum Information Theory, and also of many of its challenges. But is it possible to engineer processes that replicate quantum information with vanishingly small error? Surprisingly, here we show that there exist probabilistic phenomena where $N$ equally prepared quantum systems are transformed into a much larger number $M$ nearly perfect replicas, with an error that rapidly vanishes whenever $M$ is small compared to the square of $N$. The quadratic replication rate is the ultimate limit imposed by quantum mechanics to the proliferation of information and is fundamentally linked to the precision limits in quantum statistics—-in particular, to the quantum version of the Cramér-Rao bound.

**About the Speaker:**

Giulio Chiribella is currently Associate Professor (tenure track) at Institute for Interdisciplinary Information Sciences, Tsinghua University. He obtained his PhD in 2007 at Pavia University, Italy, under the supervision of Professor Mauro D'Ariano. Before moving to Tsinghua University, he held two postdoctoral positions at Pavia (2006-2009) and Perimeter Institute for Theoretical Physics (2009-2011), and a Senior Postdoctoral Fellowship at Perimeter Institute (2011-2012). In 2010 he has been awarded the Hermann Weyl Prize for new applications of group theoretical methods in Quantum Information. His current research interests include topics in quantum information theory, quantum foundations, and mathematical physics.