

## **Dr Giulio Chiribella**

**Associate Professor, Department of Computer Science  
Faculty of Engineering, HKU**

*Croucher Senior Research Fellowship 2018-2019*

Dr Giulio Chiribella is an Associate Professor at the Department of Computer Science of the University of Hong Kong and a CIFAR-Azrieli Global Fellow in Quantum Information Science. A physicist by training, he obtained his PhD in 2007 from the University of Pavia, Italy, with works that were later awarded the 2010 Hermann Weyl Prize. He has made fundamental contributions to the application of group theory in quantum information, to the study of quantum reference frames, to the foundations of quantum mechanics, and to the theory of quantum causal networks. He is member of the Standing Committee of the International Colloquia on Group Theoretical Methods in Physics (ICGTMP), Visiting Fellow of Perimeter



Institute for Theoretical Physics, Member of the Canadian Institute of Advanced Research, Member of the Foundational Questions Institute (FQXi), and Fellow of the National Virgilian Academy of Sciences, Letters and Arts of Mantova, Italy.

He leads an interdisciplinary research group engaged in a broad spectrum of topics at the interface between physics and information science. The overarching approach of the group can be described as one of “applied foundations”, in which the study of the foundational principles of quantum mechanics is combined with a search for new, more efficient ways to process information. Chiribella’s team recently initiated the development of a new model of quantum communication, where multiple transmission lines are combined in a quantum superposition of different configurations. The team developed new communication protocols, where information can travel simultaneously along many distinct paths, allowing a sender and a receiver to communicate in conditions where no communication is currently possible. This new paradigm of communication could speed up the transmission of information and increase the number of bits that a sender and a receiver can communicate privately through a given set of transmission lines, with potential applications to future quantum communication networks.

### **Awards and Honours**

- Hermann Weyl Prize 2010
- CIFAR-Azrieli Global Scholar in Quantum Information Science (2016)
- 1000 Talents Plan of China Young Investigator Award (2012)
- Tsinghua University Excellent Teacher Award (2015)
- Croucher Senior Research Fellowship 2018-2019