

Quantum communication – a mathematicians view and additivity problem

Motohisa Fukuda

Yamagata University Japan

Wednesday, September 26, 2018 at 14:00 am
Room: Falkenbrunnen, Chemnitzer Str. 48a, FAL 353

Abstract:

In this talk, we study quantum entanglement to begin with, then move on to topics on quantum channels and their additivity/non-additivity problems. Quantum entanglement is an important concept in the field of quantum information, and we will understand it in terms of entropy.

Quantum channels are models of information transmission with quantum states, and this "quantumness" differentiates their theory from the classical one. As a result, we do not have a non-asymptotic capacity formula while such a formula was established by C. Shannon half a century ago. Additivity/non-additivity problems are closely related to capacity formulas of quantum channels and they will be main topics of this talk. No prior knowledge on physics is required.

Bio:

Motohisa Fukuda was born in Tokyo, Japan. Later in UK, he earned a BSc in mathematics from Imperial College London (2003) and a PhD from University of Cambridge (2007). Afterwards, he worked as a Krener assistant professor at University of California, Davis in USA (2007 - 2010). He continued his research at Institute for Quantum Computing (University of Waterloo) in Canada (2010 - 2012), and at Technische Universität München in Germany (2012 - 2015). Currently he is an associate professor at Yamagata University in Japan (2015 - present).