THE CHINESE UNIVERSITY OF HONG KONG
Department of Information Engineering
Seminar

Non-iterative algorithm for channel capacity

By

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Date : **23 April 2024 (Tuesday)**
Time : **10:30am – 11:30am**
Venue : **Rm 801, Ho Sin Hang Engineering Building, CUHK**

Abstract

Generalizing the algorithm by (IEEE Trans. IT 69, 1681), we propose a non-iterative algorithm to calculate the channel capacity. Unlike the preceding method, which is limited to a specific class of channels, our method is applicable to all channels. Leveraging the information geometrical structure, our approach avoids any iteration steps.

Biography

Masahito Hayashi received the B.S. degree from the Faculty of Sciences, Kyoto University, Japan, in 1994, and the M.S. and Ph.D. degrees in mathematics from Kyoto University, Japan, in 1996 and 1999, respectively. He worked in Kyoto University as a Research Fellow of the Japan Society of the Promotion of Science (JSPS) from 1998 to 2000, and worked in the Laboratory for Mathematical Neuroscience, Brain Science Institute, RIKEN from 2000 to 2003, and worked in ERATO Quantum Computation and Information Project, Japan Science and Technology Agency (JST) as the Research Head from 2000 to 2006. He worked in the Graduate School of Information Sciences, Tohoku University as Associate Professor from 2007 to 2012. In 2012, he joined the Graduate School of Mathematics, Nagoya University as Professor. He worked in the Shenzhen Institute for Quantum Science and Engineering, Southern University of Science and Technology as Chief Research Scientist from 2020 to 2023. In 2023, he joined School of Data Science, The Chinese University of Hong Kong, Shenzhen as Professor and was granted as Presidential Chair Professor. He also joined Shenzhen International Quantum Academy as Chief Research Scientist.

Also, he worked in Centre for Quantum Technologies, National University of Singapore as Visiting Research Associate Professor from 2009 to 2012 and as Visiting Research Professor from 2012 to now. He also worked in Shenzhen Institute for Quantum Science and Engineering, Southern University of Science and Technology, China as a Visiting Professor from 2018 to 2020, and in Center for Quantum Computing, Peng Cheng Laboratory, China as a Research Scientist from 2019 to 2020.

In 2011, he received *Information Theory Society Paper Award (2011)* for "Information-Spectrum Approach to Second-Order Coding Rate in Channel Coding". In 2016, he received the Japan Academy Medal from the Japan Academy and the JSPS Prize from Japan Society for the Promotion of Science. In 2017, he was promoted to IEEE Fellow. In 2022, he was promoted to IMS Fellow.

** ALL ARE WELCOME **

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