Virtual QBIC Workshop 2020

Dates:

From October 14 Wednesday, to October 16 Friday, 2020

Venue:

Vertual Workshop using Zoom

Main Place : Noda Campus of Tokyo University of Science

Noda City, Chiba 278-8510, Japan

a) Main Session (TUS & International Session)

October 14-16, Wednesday, Thursday, Friday　10:30 – 15:00 **(TUS Session)**

October 14-16, Wednesday, Thursday, Friday　15:10 – 18:00 **(International Session)**

at Vertual Workshop using Zoom

b) Poster Session

From October 14, Wednesday to October 15 Thursday

(Question and Answer, October 15, Thursday 12:05 - 12:50) web site and by zoom

URL　　https://www.rs.noda.tus.ac.jp/qbic/VQBICworkshop2020new.html

Virtual QBIC Workshop 2020

Purpose

The main aim of QBIC and the conference is to create a new paradigm synthesizing Quantum Information and Bio-Informatics based on efforts by active researchers traversing various fields of Mathematics, Physics, Information and Life Science.

Organizer

N. Watanabe (Tokyo University of Science, Japan)

Advisory Committee

L. Accardi (Roma II University, Italy)

A. Jamiolkowski, Nicolaus Copernicus University, Poland

A. Khrennikov, Linnaeus University, Sweden

I. Volovich (Steklov, Mathematical Institute, Russia)

Local Committee

T. Matsuoka (Suwa University of Science, Japan)

S. Miyazaki (Tokyo University of Science, Japan)

K. Sato (Tokyo University of Science, Japan)

S. Iriyama (Tokyo University of Science, Japan)

T. Kamizawa (Tokyo University of Science, Japan)

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Virtual QBIC Workshop 2020

Invited Speakers

L. Accardi, Roma II University, Italy

D. Chruscinski, Nicolaus Copernicus University, Poland

W. Freudenberg, Brandenburg University of Technology, Germany*

F. Hiai, Emeritus Professor, Tohoku University, Japan*

A. Jamiolkowski, Nicolaus Copernicus University, Poland

A. Khrennikov, Linnaeus University, Sweden

F. Mukhamedov, The United Arab Emirates University, U.A.E.

M. Yoshida, Kanagawa University, Japan

S. Lakaev, Samarkand State University, Uzbekstan

N. Obata, Tohoku University, Japan*

S. Oryu, Emeritus Professor, Tokyo University of Science, Japan

I.Ojima, Research Origin for Dressed Photon, Japan

M. Regoli, Roma II University, Italy

K. Sanaka, Tokyo University of Science, Japan

Si Si, Emeritus Professor, Aichi Prefectual University, Myanmar

H. Takayanagi,Tokyo University of Science, Japan *

J.S. Tsai, Tokyo University of Science & RIKEN, Japan

S. Tarucha, RIKEN, Japan

T. Toyoda, Emeritus Professor, Tokai University, Japan*

D. Wanke, Ludwig-Maximilians-Universität München, Germany

S. Watabe, Tokyo University of Science, Japan

I.Volovich, Steklov, Mathematical Institute, Russia

QBIC members in Tokyo University of Science

Sponsor

Tokyo University of Science

Nano-Quantum Information Research Division, RIST

Program of Virtual QBIC Workshop 2020

October 14, 2020, Wednesday - Main Session (TUS session 1)

10:30 ～ 10:35   *Opening Address* (Tokyo University of Science, Japan)

10:45 ～ 11:30   I. Ojima, Research Origin for Dressed Photon, Japan
          Dissipativity associated with visualization processes

11:35 ～ 12:20   S. Oryu, Emeritus Professor, Tokyo University of Science, Japan
          A Possibility of a Long Range Three-Body Force in the Hadron System

12:20 ～ 13:20   **Lunch Break and Poster Presentatio**

13:20 ～ 14:05   K. Sanaka, Tokyo University of Science, Japan
          Quantum interference of multi-mode biphotons

14:10 ～ 14:55   Si Si, Emeritus Professor, Aichi Prefectural University, Myanmar
          Some aspects of time independent noise

October 14, 2020, Wednesday - Main Session (International session 1)

15:10 ～ 15:20   *Opening Address* (H. Takayanagi, Vice-Rector, Director of RIST, Tokyo University of Science, Japan)

15:20 ～ 16:10   L. Accardi, Roma II University, Italy
          The quantum mechanics canonically associated to free probability

16:15 ～ 17:05   D. Chruscinski, Nicolaus Copernicus University, Poland
          Deformed Fock spaces and operators

17:10 ～ 18:00   L. Accardi*, Y. G. Lu#, M. Regoli*, *Roma II University and #Bari University , Italy
          A note on Shannon theorem on secure codes

October 15, 2020, Thursday - Main Session (TUS session 2)

10:30 ～ 11:15　J.S. Tsai, Tokyo University of Science & RIKEN, Japan
　　　　　　　Superconducting quantum computer, the recent progresses

11:20 ～ 12:05　S. Tarucha, RIKEN, Japan
　　　　　　　Si platform for spin-based quantum computing with high-fidelity
　　　　　　　quantum gates

12:05 ～ 12:50　　　　　**Lunch Break and Poster Presentation**

12:50 ～ 13:35　M. Yoshida, Kanagawa University, Japan
　　　　　　　S. Albeverio,, University of Bonn, Germany
　　　　　　　On an algebra of Hida distributions corresponding to the Euclidean
　　　　　　　quantum field theory with d $\geqq 3$

13:40 ～ 14:25　N. Watanabe, Tokyo University of Science, Japan
　　　　　　　On Complexity for Compound Quantum Systems

14:30 ～ 15:15　T. Matsuoka, Suwa Tokyo University of Science, Japan
　　　　　　　On Quatnum Conditionality

October 15, 2020, Thursday - Main Session (International session 2)

15:20 ～ 16:10　A. Jamiolkowski, Nicolaus Copernicus University, Poland
　　　　　　　On Applications of the p-Irreducibility of Positive Polynomials in
　　　　　　　Physics and Biology

16:15 ～ 17:05　A. Khrennikov, Linnaeus University, Sweden,
　　　　　　　Getting rid of nonlocality from quantum physics

17:10 ～ 18:00　F. Mukhamedov, The United Arab Emirates University, U.A.E.
　　　　　　　Quantum Volterra operators and associated quantum genetic algebras

October 16, 2020, Friday - Main Session (TUS session 3)

10:30 ～ 11:15　K. Kuchitsu, Tokyo University of Science, Japan

Long-distance signal transmission and morphogenesis in plants: roles of Ca^{2+} and reactive oxygen species

11:20 ～ 12:05　S. Watabe, Tokyo University of Science, Japan,

M. Z. Serikow, University of Notre Dame, U.S.A.,

S. Kawabata, AIST, Japan,

A. Zagoskin, Loughborough University, UK

Scaling Law in Large Quantum Devices with Dissipation

12:05 ～ 13:30　　　　　　　　　**Lunch Break**

13:30 ～ 14:00　T. Kamizawa, Tokyo University of Science, Japan

Some Remarks on Shifner-Erougin-Salakhova-Chebotarev Type Differential Equations

14:05 ～ 14:25　M. Yoshida and Rahman, MD Masudu, Kanagawa University, Japan

On a detection algorithm for electrocardiogram through the wavelet transforms with pseudo differential operator like operators.

14:30 ～ 14:50　M. Kihara and S. Iriyama, Tokyo University of Science, Japan

Single Sign-on Protocol Based on The One-time Pad and Its Implementation

14:55 ～ 15:15　K.Jimbo and S. Iriyama, Tokyo University of Science, Japan

Note on Mathematical Framework of Strongly Asymmetric Public Key Agreement and Security Analysis

October 16, 2020, Friday - Main Session (International session 3)

15:20 ～ 16:10　I. Volovich, Steklov Mathematical Institute, Russia

Complete integrability of quantum dynamical systems

16:15 ～ 17:05　D. Wanke, Ludwig-Maximilians-Universität München, Germany

Deciphering the DNA-code: Insights into the local coding and decoding transcriptional regulation of protein coding genes

17:10 ～ 18:00　S. Lakaev, Samarkand State University, Uzbekstan

The extended bose-Hubbard models with zero range and nearest-neighbor interactions: New, exactly solvable case.

List of Poster Presentations

1. Farrukh Mukhamedov$, Kyouhei Ohmura#, Noboru Watanabe*, *Tokyo University of Science and #T&S Inc., Advanced Technology Solutions Dept., Japan and $The United Arab Emirates University, U.A.E.
   Renyi entropy on C*-algebras

2. Masayuki Miyashita#, Noboru Watanabe*, *Tokyo University of Science and # SoftBank Corp., Advanced Technology Research Office, Japan
   A study of Quantum Teleportation Using Squeezed State and Beam Splitter

3. Yoichi Maebayashi, Noboru Watanabe, Tokyo University of Science, Japan
   Proof of universal resource in a graph state with a complete graph of four vertices

4. Masaki Nakazato, Noboru Watanabe, Tokyo University of Science, Japan
   On Formulation of Quantum Fourier Transform based on FTM gate

5. Kengo Fujisawa and Kouji Tahata, Tokyo University of Science, Japan
   Decomposition of independence using association model based on f-divergence for two-way contingency tables

6. Takuma Nisimaki and Keiko Sato, Tokyo University of Science, Japan
   Development of a web application for phylogenetic analysis based on genetic difference considering the effect of gaps

7. Mai Imada and Satoru Miyazaki, Tokyo University of Science, Japan
   Comparative evolutionary analysis of influenza A virus genome sequences between human and swine to elucidate the selective genome packaging mechanism