

Mini Workshop: Mathematical Aspects of Topological Phases of Matter and Quantum Computing

Place: 2F Seminar Room, AIMR Main Building, Tohoku University
(2-1-1 Katahira, Aoba-ku, Sendai, 980-8577 Japan)

Date: July 24(Mon.)-July 25(Tue.), 2017

Access: <http://www.wpi-aimr.tohoku.ac.jp/en/about/access/>

Program:

Monday, July 24th

9:20 Opening Remark: Junichi Sone (JST)

9:30 - 10:20 Zhenghan Wang (Microsoft Research Q-station, UCSB)
Topological quantum computing with Majoranas I

10:30 - 11:20 Yoshihisa Yamamoto (Stanford U.)
Quantum phase transition in optical neural networks applied to Ising problems
* This lecture is supported by the CSTI ImPACT program, one of whose aims is research towards quantum artificial brains and quantum simulations.

11:30 - 12:20 Timothée Leleu (U.Tokyo)
Quantum suppression of chaos in optical neural networks applied to satisfiability problems
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Lunch Break

14:00 - 14:50 Takafumi Sato (Tohoku U.)
Topological materials science program and recent progress in topological insulators

15:00 - 15:30 Hideaki Obuse (Hokkaido U.)
Topological phases of quantum walks

15:50 - 16:20 Timothée Levi (U. Tokyo)
Spiking Neural Network for BioHybrid Systems.

16:30 - 17:20 Zhenghan Wang
Topological quantum computing with Majoranas II

18:00 Buffet dinner

Tuesday, July 25

9:00 - 9:50 Yong P. Chen (Purdue U., Tohoku U.)
How to measure topology in transport

10:00 - 10:50 Shiro Saito (NTT)
Quantum measurements and sensing using superconducting circuits

11:00 - 11:30 Yuichiro Matsuzaki (NTT)
Robust Magnetic Field Sensing Beyond the Standard Quantum Limit

Lunch Break

13:30 - 14:20 Mikio Furuta (U.Tokyo)
Pin(2)-Seiberg-Witten Floer functor on homology 3-spheres

14:30 - 15:00 Chris Bourne (Tohoku U.)
Topological phases, localisation and delocalisation of random Schrödinger operators.

15:30 - 16:00 Shin Hayashi (MathAM-OIL, Tohoku U.)
Topological invariants and corner states for Hamiltonians on a three dimensional lattice

16:00 - 16:50 Zhenghan Wang
Topological quantum computing with Majoranas III

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