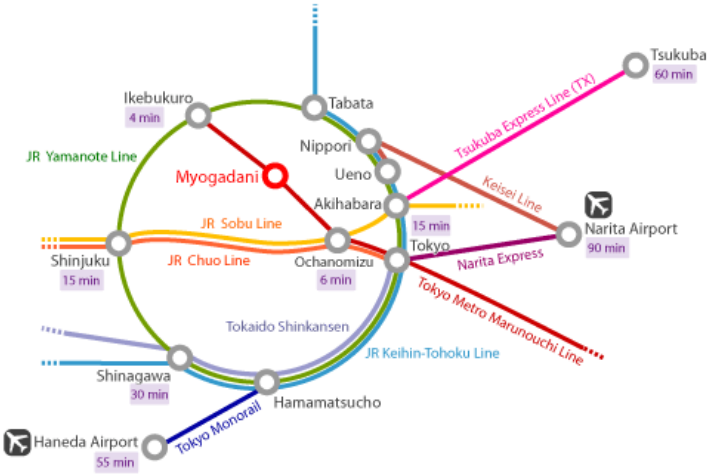
Physics of bulk-edge correspondence & its universality

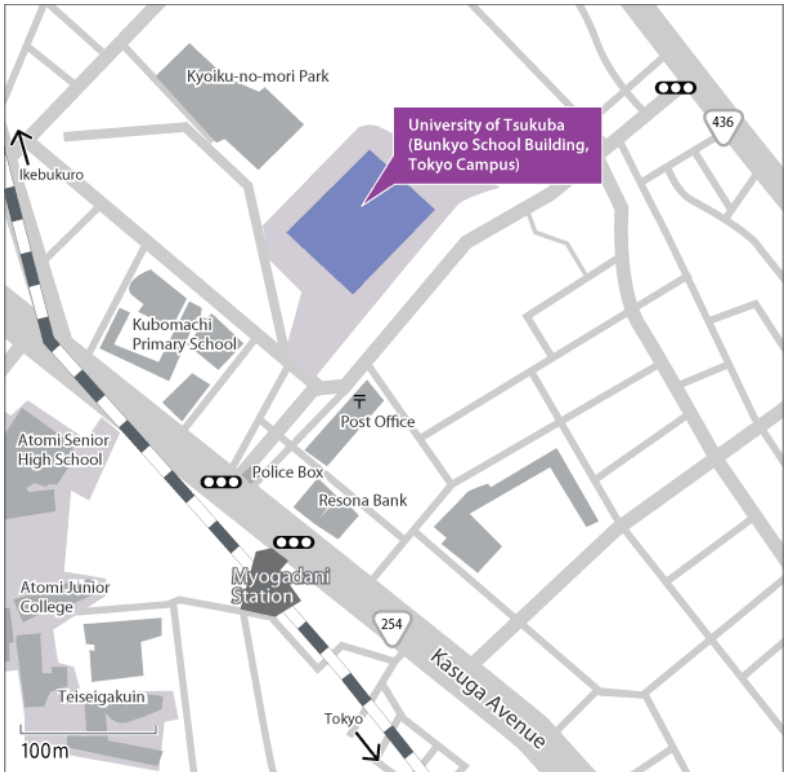
From solid state physics to cold atoms

International workshop 2015, Sep.27-29 (2015)

Workshop place:
Univ. of Tsukuba, Bunko School Building, Tokyo Campus
3-29-1 Otsuka, Bunkyo-ku, 112-0012 Tokyo

Access





Program

Sep. 26 (Sat.)

18:00- Get together for dinner : TOKYO GARDEN PALACE
1-7-5 Yushima, Bunkyo-ku, Tokyo 113-0034 Tel: 03-3813-6211
http://www.hotelgp-tokyo.com/english/sty01_e.html

Sep. 27 (Sun.)

Chair: T. Kawarabayashi

9:00-9:20 Y. Hatsugai (Univ. Tsukuba)
[Welcome] Bulk-edge correspondence: from math to physics

9:20-10:00 H. Aoki (Univ. Tokyo)
Topological edge states --- from cold-atom systems to organic ferromagnets

10:00-11:00 M. Hafezi (J. quant. Inst. & Univ. of Maryland)
Quantum Hall physics in photonics systems and observation of chiral anomaly

11:00-11:20 Break: (coffee)

11:20-12:20 L. Fallani (Univ. of Florence & LENS)
Observing edge states with ultracold neutral fermions in synthetic dimensions

12:20-13:30 Lunch

Chair: Y. Hatsugai

13:30-14:10 A. Furusaki (RIKEN)
Topological charge of Dirac semimetals with rotation symmetry

14:10-14:50 T. Kariyado (Univ. of Tsukuba)
Mechanical graphene: Bulk-edge correspondence with Newton's law

14:50-15:50 Poster & discussion with coffee

15:50-16:30 T. Ohtsuki (Sophia Univ.)
Disordered single and multi-layered Chern insulators

16:30-17:00 T. Matsui (Univ. Tokyo)
STS Studies of Zigzag Edge State and Quantum-Hall Edge States at Graphite Surfaces

17:00-17:40 J. Goryo (Hirosaki Univ.)
Phenomenology of a hexagonal chiral d-wave superconductor with spin orbit coupling

18:00- Dinner (organized by K. -I. Imura)

Sep. 28 (Mon.)

Chair: M. Hafezi

9:00-10:00 Y. Takahashi (Kyoto Univ.)

Topological Thouless pumping of ultracold fermions

10:00-10:30 S. Kitamura (Univ. Tokyo)

Design of interction-driven Chern insulator on an optical lattice

10:30-10:50 Break: (Coffee)

10:50-11:50 M. Lohse (Ludwig-Maximilians-Universität)

Measuring the Chern number of Hofstadter bands with ultracold bosonic atoms

11:50-13:00 Lunch

Chair: A. Kimura

13:00~~-14:00~~ T. Fukui (Ibaraki Univ.)

-13:40 Entanglement Chern numbers for topological ground states

13:40-14:20 P. Delplace (CNRS, Ecole Normale Supérieure de Lyon)

Topologically protected edge state in unitary systems

14:20-15:10 Poster & discussion with coffee

15:10-15:50 K.-I. Imura (Hiroshima Univ.)

Thin film topological insulators: bulk-edge correspondence, dimensional crossover and superlattice generalization

15:50-16:30 A. Tanaka (NIMS)

SPT states of antiferromagnets in 1 to 3 dimensions

16:30-17:10 I. Maruyama (Fukuoka Inst. Tech.)

Entanglement Dynamics of Optical Lattice Systems with Sine Square Deformation

18:00- Dinner (Banquet)

Restaurant “Forest-Hongo”,

6−6−16−4 Hongo, Bunkyo-ku, Tokyo 113-0033 TEL. 03-5840-8088

http://www.forest-hongo.com/access/index.html

Sep. 29 (Tue.)

Chair: L. Fallani

9:00-10:00 F. Mahmood (MIT)

Floquet-Bloch states on the surface of topological insulator

10:00-10:40 T. Oka (Dresden MPIPKS)

Towards a holographic Floquet Weyl semimetal

10:40-11:00 Break: (Coffee)

11:00-12:00 A. Kimura (Hiroshima Univ.)

Surface Dirac fermions and their spin polarizations of three-dimensional topological insulators

12:00-13:10 Lunch

Chair: T. Fukui

13:10-13:50 T. Kawarabayashi (Toho Univ.)

Zero modes in tilted Dirac fermions with vortices

13:50-14:20 K. Sumida (Hiroshima Univ.)

Long duration of non-equilibrium Dirac fermions in topological insulator $(Sb,Bi)_2Te_3$

14:20-14:50 T. Aono (Ibaraki Univ.)

Tight-binding theory of surface spin states on bismuth thin films

14:50-15:00 Closing : Y. Hatsugai

17:00- Sumida River cruise (Yakatabune) http://www.yakata-k.com

Posters

P 1. T. Ohta (YITP, Kyoto Univ.)
Entanglement of the Kitaev model with long-ranged couplings and periodic modulation

P 2. G. Yusa (Tohoku Univ.)
Real-space imaging of fractional quantum Hall liquid in non-equilibrium state

P 3. Y. Imamura (YITP, Kyoto Univ.)
Bulk-edge correspondence in coupled wire construction

P4. Y. Ibe (Kyoto Univ.)
Chiral magnetic effect due to inhomogeneous magnetic field in Weyl semimetals

P5. H. Araki (Univ. Tsukuba)
Kane-Mele Model with Ferromagnetism by the Entanglement Chern Number

P6. S. Oono (Univ. Tsukuba)
Section Chern number and edge states in a 3D photonic crystal

P7. R. Itagaki (Toho Univ.)
Zero-energy modes at topological defects with higher topological numbers

P8. Y. Takasu (Kyoto Univ.)
Prospects for fermionic superfluids with spin-orbital interaction

P9. S. Nakajima (Kyoto Univ.)
Topological Thouless Pumping of Ultracold Fermions

P10. K.Takasan (Kyoto Univ.)
Laser-induced topological phases of topological Kondo insulators

P11. K. Kobayashi (Sophia Univ.)
Density of states scaling in Weyl/Dirac semimetals

P12. Y. Yoshimura (Hiroshima Univ.)
Dimensional crossover of topological properties: case of topological superlattice insulator thin films

P13. M. Nurmamat (Hiroshima Univ.)
Direct Visualization of Tuned Topological Character in $PbBi_6Te_{10}$

P14. P. Nguyen Thanh (RIKEN)
Controlling and Probing Non-Abelian Emergent Gauge Potential in Spinor Bose-Fermi Mixtures

P15. K. Kohda (Univ. Tsukuba)
Localized states of graphene near a point defect with Kekulé deformation