



Seminar

Tomonaga-Luttinger Liquid Nature of Integer Quantum Hall Edge Excitations

Masayuki Hashisaka

NTT Basic Research Laboratories , Japan



Time: 2:30Pm, Aug. 27, 2018 (Monday)

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Venue: Room W563, Physics building, Peking University

地点: 北京大学物理楼, 西563会议室

Abstract

Charge excitations in an integer quantum Hall system travel along a chiral edge channel. When two or more edge channels are lying in parallel, the channels interact to exhibit Tomonaga-Luttinger-liquid (TL-liquid) nature of edge excitations [1]. In this presentation, we review charge dynamics in such quantum Hall TL liquids; especially spin-charge separation [2] and charge fractionalization [3] in co- and counter-propagating edge channels, respectively. We first introduce chiral distributed-element circuit model for describing intra- and inter-channel interaction [4]. Then, experimental studies on both these TL-liquid behaviors are demonstrated.

References:

- [1] M. Hashisaka and T. Fujisawa, *Reviews in Physics*, submitted.
- [2] M. Hashisaka et al., *Nature Physics* 13, 559 (2017).
- [3] H. Kamata et al., *Nature Nanotechnology* 9, 177 (2014).
- [4] M. Hashisaka et al., *Phys. Rev. B* 85, 155424 (2012); M. Hashisaka et al., *Phys. Rev. B* 88, 235409 (2013).

About the speaker

- 2009/3: Ph.D from Kyoto University
- 2008/4 - 2009/3 Research Fellow of the Japan Society for the Promotion of Science for Young Scientists
- 2009/4 - 2017/6 Assistant Professor, Department of Physics, Tokyo Institute of Technology
- 2017/7 - 2017/11 Research Specialist, NTT Basic Research Laboratories
- 2017/12 - Now Senior Research Scientist, NTT Basic Research Laboratories
- 2017/10 - Now Research Director, PRESTO, Japan Science and Technology Agency (Concurrent post)

Awards:

- 2008: 29th International Conference on the Physics of Semiconductor (ICPS) Young Author Best Paper Award
- 2009: Young Scientist Award of Tokyo Institute of Technology
- 2016: Young Scientist Award of the Physical Society of Japan
- 2018: Nanotechnology Platform Japan program, the Ministry of Education, Culture, Sports, Science and Technology (MEXT) Major results of 2016
- 2018: The Young Scientists' Prize, the Commendation for Science and Technology by the Minister of Education, Culture, Sports, Science and Technology (MEXT) .