

外国人客

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I have greatly enjoyed my four months of productive and enlightening visit to the Oshikawa group at ISSP. This has been, by far, my longest stay in a foreign country outside my residences in the USA and China, and it sets a very high bar for my future sabbaticals. I have made many new friends at ISSP and learned a great deal about physics and Japanese culture from them.

ISSP offered a plethora of scientific activities for me to participate in: weekly group meetings with both the Oshikawa and Oka groups, a 2024 December conference for junior faculty working on condensed matter physics from institutions across Japan, a 2025 February international conference on non-equilibrium dynamics, and countless seminars. My stay in Kashiwa also provided the opportunity to visit other institutions in the Tokyo area, such as RIKEN and the University of Tokyo. I presented my research on superconductivity for the visiting professor lectures at ISSP, discussed topological magnons in an Applied Physics Colloquium on the Hongo campus of the University of Tokyo, and gave another seminar on open quantum systems at RIKEN.

Thanks to the vibrant scientific atmosphere and the high concentration of top-level researchers and visitors at ISSP, I initiated a number of collaborative projects. In collaboration with the Oshikawa group, I made progress on characterizing critical mixed states in one spatial dimension using various correlation and entanglement measures. With the Oka group at ISSP and the Morimoto group at the University of Tokyo's Applied Physics Department, I advanced our work on time-resolved photocurrents in light-driven Landau levels. We have completed the majority of calculations for both projects and expect to produce a manuscript on each subject in the next few months. Beyond these established results, I also began collaborations with visiting professor Igor Herbut on competing orders with $SO(3)$ order parameter

manifolds in gapped chiral superconductors of two-dimensional Dirac fermions; with Dr. Tokiro Numasawa on Nambu-Goldstone modes in open quantum systems; with Dr. Han Yan on topological states protected by multipole symmetries; and with the Kawabata group on interacting topological states in open quantum systems. I plan to continue these collaborations through long-range communication after my visit to ISSP.

Finally, I want to sincerely thank the Oshikawa group and the International Liaison Office at ISSP for making my visit as smooth as possible. In particular, my family is deeply grateful to Ms. Yuko Ishiguchi for her time and effort spent helping us. Since my six-month-old baby traveled with my wife and me to Kashiwa, many more issues arose (e.g., regarding infant care) compared to a typical visiting professor's stay. It was Yuko who patiently answered all my questions and eased my frustrations during unexpected difficulties. I am also grateful to Ms. Atsuko Tsuji for taking all the photos and sharing all the sweets with a big smile, and to Ms. Shiho Suzuki for assisting me with the registration procedures upon my arrival and departure from Kashiwa. Last but not least, I cannot thank my host, Professor Masaki Oshikawa, enough for making all these precious and memorable times in Japan possible. Thanks to his support in all aspects, my family and I truly felt at home during our visit to ISSP, and we look forward to meeting our friends at ISSP again in the future.

