

MERIT Long-Term Overseas Dispatch Report (Aix-Marseille University)

Tetsuya Sato, MERIT 11th Cohort, D3, Takeo Kato Group, ISSP

From May 15 to June 17, I stayed at Aix-Marseille University in Marseille, France, for about one month. I was accompanied by Professor Kato and Mr. Murabayashi from our lab, and both of them provided great support during our research and daily life there. In terms of research, I had the valuable opportunity to work with Professor Manchon at CINaM, a leading expert in the field of spintronics theory. Together, we engaged in research on the interaction between orbital currents and chiral phonons, making this stay extremely fruitful. For my daily life and working environment, I was based in Professor Thierry's group at CPT, where I was able to interact with lab members and carry out my research in a comfortable and collaborative setting.

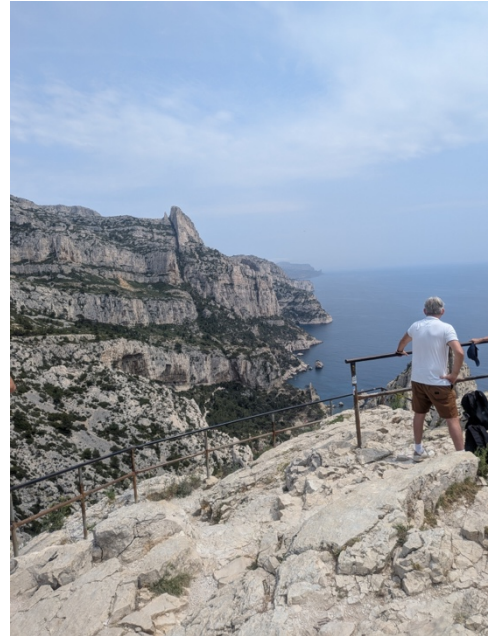


During the first week of my stay, Professor Manchon was in Paris, so we held discussions online, during which we talked about the direction of the research. His group has been actively working on orbital current-related studies, and since I have previously worked on chiral phonon systems, we decided to combine these two fields as the core of our joint research.

After that, I held discussions with Professor Manchon approximately once a week. Before each meeting, I summarized my progress in a notebook and came prepared for our discussions. Professor Manchon provided valuable suggestions, particularly regarding the physical interpretations and experimental setup, which I incorporated as I advanced the research. As a result, I succeeded in theoretically deriving the expected outcomes and obtained reasonably coherent results, including numerical calculations and physical interpretations. Currently, I am conducting further calculations and analysis with the goal of publishing a paper.

Moving forward, I hope to continue engaging in online discussions with Professor Manchon and make steady progress toward publication.

For daily work, I was kindly allowed to use the office space of Professor Thierry's group, located in another building on campus. The university is situated in a beautiful, nature-rich mountainous area, and I was able to refresh myself by walking the nearby hiking trails, which contributed positively to my research. In particular, the view from a cape located about 3 kilometers from the university was breathtaking, and I felt envious of the proximity of such an excellent hiking course to the campus.



Toward the end of my stay, Professor Thiery kindly invited me to a dinner gathering. I had a wonderful time interacting with the members of his laboratory. We enjoyed delicious sausages and wine, and I was able to deepen my connection with the students in the lab.

Overall, the stay was both intellectually stimulating and personally enriching, in terms of both research and daily life. Opportunities for long-term stays like this are quite rare, so I intend to cherish this experience and continue to devote myself to further research activities.

[Acknowledgments]

I would like to express my heartfelt gratitude to Professor Manchon and all the members of his lab at Aix-Marseille University for warmly welcoming me and supporting my research during this stay. I am also deeply thankful to Professor Thibaut, Professor Thierry, and their lab members for their daily support, as well as to Professor Kato and Mr. Murabayashi, who accompanied me and supported me throughout this stay. The experience I gained during this period has been invaluable not only for my future research but also for broadening my perspective as a researcher. I hope to continue building on these connections and further develop them into international collaborative research in the future.