

# 外国人客員所員を経験して

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I spent half a sabbatical at ISSP from Nov. 2019 to May 2020. My hosts at ISSP were Prof. Sakakibara and Prof. Nakatsuji. Although I had never met them before, I had always been following their work and it was a pleasure to be able to visit ISSP to work with them. I was very impressed by the range of activities and experimental infrastructure at ISSP.

The project that I had written for my visiting professorship was on trying to synthesize single crystals of the Heavy Fermion material  $\text{Yb}_2\text{Fe}_3\text{Si}_5$  and to study its low temperature properties as a function of field and pressure. I was able to grow the first ever single crystals of  $\text{Yb}_2\text{Fe}_3\text{Si}_5$  and start a detailed low temperature study of its magnetic, thermal, and electrical transport properties. On this project I was able to start collaborations with Prof. Sakakibara's group and Prof. Uwatoko's group. This work is still continuing and I will keep collaborating with groups at ISSP to understand this fascinating material in as much detail as possible.

I also started working on a different topic of possible Topological and strong correlation superconductivity in the La-Ru-Si system. We grew high quality single crystals and started a detailed study of the anisotropic superconducting properties. I also started a collaboration with Prof. Y. Kohama's group to measure the high field quantum oscillations to unveil the Fermiology of electrons in this material. In addition, we started a collaboration with Prof. R. Arita's group at the Univ. of Tokyo to calculate the theoretical band structure of the material.

Thus it was academically a very fruitful stint for me personally. The second half of my stay however, was full of uncertainties and confusion as the world and Japan started tackling the challenge presented by the Corona virus which escalated into a global pandemic.

According to the demand of the unusual situation, only a restricted access to ISSP in the last part of my stay was possible, which limited the measurements we were able to do. However, I plan to continue working on the various projects we started at ISSP.

I must convey my heartfelt gratitude to the staff at the international liaison office for making my stay as convenient and pleasant as possible. I specially want to thank Yuko for her help in various matters and situations, many times going beyond the demand of her duties.

I also want to acknowledge the help of Kyoko Fujita for her help and administrative support during my stay.

I finally would like to thank the Nakatsuji group members who were always ready and eager to help me in whatever way they could. I thank Nan and Akito with whom I worked on some projects. A special mention must be made of Hiroto Nakamura, who I worked with almost every day. He was very patient in teaching me the use of various instruments and equipment that I used during my stay. I wish him all the best in his academic career.

I also must mention the company of Mayukh Ray and Dilip Bhoi (Uwatoko group) which made coffee sessions enjoyable. I particularly liked our discussions on physics, politics, and almost everything under the sun.

I enjoyed and appreciate the interactions with Prof. Nakatsuji, which were always interesting. I also enjoyed having dinner parties with Satoru and various group members on several occasions.

I also thank the other faculty at ISSP with whom I interacted. These include Prof. Sakakibara, Prof. M. Yamashita, Prof. Uwatoko, Prof. Y. Kohama, and Prof. Masashi Takigawa.

I had a wonderful stay at ISSP and I look forward to the opportunity to visit again.





※2019年11月撮影