

# 外国人客員所員を経験して

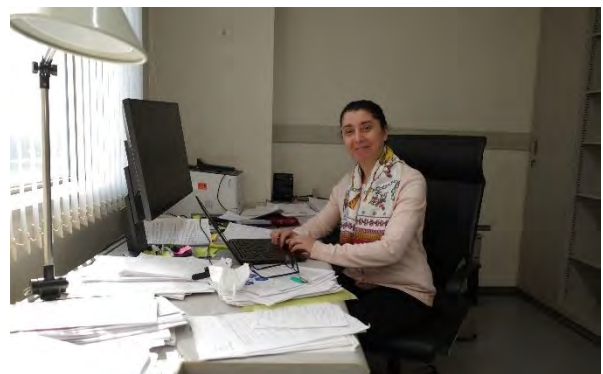
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The ISSP visiting professor program opens the way not only to establish a strong collaboration between international research groups, but also to build a bridge between different cultures.

I am greatly honored to take part in this program and be a visiting professor at ISSP, the world-renowned research institute. I was eager to start, in December 2021, my visit of nine months in the group of Prof. Toshihito Osada. However, due to Covid restrictions, my visit was postponed to the beginning of June 2022. Before arriving at Japan, the first thing which caught my impression is the great efficiency of the ISSP International Liaison office (ILO) staff, and in particular Mrs. Yuko Ishiguchi and Ms. Ayano Hashiguchi, who kindly took care of all the administrative procedures related to my visit. Once I arrived at ISSP, I was deeply touched by the warm hospitality of Prof. Osada and all the members of his lab. Mrs. Hanae Ara, the secretary of Prof. Osada-lab (Osa-lab) and Dr. Kazuhito Uchida were of a great help and managed to smoothly organize my stay in the lab.

During my visit, I enjoyed discussions with Osa-lab members, especially during the weekly meetings, which have been a nice opportunity to learn about thermoelectric transport in Dirac materials and to discover new topics of interest. I also learnt a lot during the seminars organized at ISSP. For my research activities in ISSP, I first focused my priorities to conduct, with Prof. Osada, a collaborative research on thermoelectric transport in twisted heterostructure of two-dimensional (2D) materials. However, Prof. Osada introduced me, during several discussions, to spintronics as a high-quality research area in Japan. He put me in

contact with Prof. Takeo Kato who is leading a theoretical group at ISSP, with a rich activity on spintronics and mesoscopic physics. I then established with Prof. Kato a project on spin pumping effect in twisted bilayer graphene. We theoretically studied the correction to the ferromagnetic resonance (FMR) linewidth through an interface separating a ferromagnet and a twisted bilayer graphene (TBG) adjacent to a monolayer of a transition metal dichalcogenide, namely the  $WSe_2$ . We found that spin pumping, through such junction, provides not only a direct probe of the flat bands of TBG but also an accurate measurement of the magic twist angle, at which strongly correlated electronic states emerge. Our results have been presented during the APS virtual March meeting 2023 and were posted recently on arxiv. During my stay at ISSP, I also had the opportunity to visit other Japanese universities. I am grateful to Prof. Keizo Murata (Professor Emeritus at Osaka Metropolitan University (OMU)) and Prof. Akira Terai (OMU) for organizing my visit to OMU. I am impressed by their warm welcome and generous hospitality. I am grateful to Prof. Murata who introduced me to the ISSP visiting professor program. I had also the possibility to participate in a workshop on DFT in Yukawa institute at Kyoto University, where the organizers gathered researchers from condensed matter and nuclear physics.



During my stay in Kyoto, I had the chance to visit the labs of Prof. Yoshiteru Maeno and Prof. Shingo Yonezawa. I am thankful for them for shearing their recent research activities and giving me a deep description of their research facilities. I had also enjoyed a Japanese tea ceremony with Prof. Maeno in his lab.

Besides research activities, I had the chance to establish friendships in Osa-lab. I am grateful to Dr. Andhika Kiswandhi (Andhi) who helped me to have an easy and friendly stay in Japan. Thank you Andhi for the cheerful discussions. I also deeply appreciated exchanges with Dr. Murayama Chizuko who introduced me to many Japanese traditions.

I also enjoyed the delicious Japanese cookies brought by Dr. Mitsuyuki Sato. I am deeply indebted to Prof. Hatsumi Mori, the ISSP director, Prof. Osada, Prof. Keizo Murata, the ILO and the International Lodge staff for their priceless help and extreme kindness after my cycling misadventure.

I had also the chance to discover, during weekends, the amazing culture of Japan and its splendid nature. I cannot forget the autumn colors and the amazing cherry blossom (Sakura).

