ON MY RESIDENCY AT WIKO
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Life at Wiko

With the Iso Lomso Fellowship, I had the opportunity to be one of Wiko's Fellows in Berlin from 16 February 2025 to 15 May 2025. It has been a very nice and unique experience for me, as it was my first time to visit Germany. I met experienced and outstanding researchers/scholars, artists, and politicians who are so kind and working so hard to either advance their respective research fields or to make life better in this world. Beside the Fellows, I also met Wiko's fantastic community, people who are so devoted to their duties and who work hard to ease the lives of the Fellows during their residency. I can mention the people at the reception, Vera and her colleagues who are so devoted to prepare the Fellows' stay, the library team who did everything to provide us with any literature that we ask for, the people from life sciences/admissions like Jana Petri and Janina, and the IT services. You cannot be a Fellow at Wiko and forget people from the restaurant like Abdoulie

and Dunia who are always feeding you and who want you to always get more food. I would like to sincerely thank them. Above all this, the Rector Barbara reshapes your way of considering life. In fact, despite her loaded schedule, she will always find time to talk to each Fellow and she somehow remembers all of them. She is a hard-working person, so open-minded and somehow attached to sociocultural and family identities, qualities that we tend to lose nowadays. I really appreciated how she manages her team at Wiko and would like to thank the whole Wiko staff for the hospitality that I received during my stay.

I am also grateful to Wiko for activities organized to bring the Fellows together. I remember Colloquia, Thursday dinners, the Fellows tour, some Fellows' expositions organized by Wiko, and so on. I cannot forget my Thursday dinner with Angela Merkel, the former German Chancellor, who was invited to Wiko for a panel discussion on the future of democracy.

Work at Wiko

I carried out various tasks related to my research activities while at Wiko. I also managed to organize online meetings with my students in Cameroon to supervise their Master thesis work. I completed four manuscripts. Two manuscripts are in collaboration with my former group in Barcelona and researchers in the United Arab Emirates. These manuscripts are almost done and will be submitted soon. The two other manuscripts are co-authored with my students; the results are very good and they are about quantum sensors performing at the exceptional points. These manuscripts are in line with one of my research interests in the improvement of sensor sensitivity near the exceptional points, which are singularities of Non-Hermitian systems where the eigenvalues and eigenvectors of the systems coalesce. These sensors are designed to detect tiny objects such as viruses, nano-particles, bacteria, and so on. Such sensors perform better than the existing conventional sensors and are meant to improve applications like water treatment, the accurate diagnosis of diseases, the tracking and detection of air pollutants, etc. Experimental implementation of these sensors already exists for optical and electronic systems, and sensing performances have been reported that are better than those of conventional sensors. Our aim is to enhance such performances by exploiting quantum resources and artificial intelligence.

Experience

I had a very nice experience during my stay at Wiko. The discussions during lunch with people from different disciplines and cultures and from all over the world have

substantially reshaped my opinion about many things. For instance, my thoughts about the social sciences have been completely redirected. Thinking that social sciences are not useful to change our societies, for example, was wrong. I instead realize that they directly impact our societies even more than natural sciences. Moreover, I came to know that both social and natural scientists must work together to address real world issues. Such an environment not only allows us to be open-minded toward other fields, it also stimulates multidisciplinarity in science.

Furthermore, I was able to strengthen my research network and my contact with outstanding scholars. I had an opportunity to visit one of my collaborators, Flore Kunst, at the Max Planck Institute for the Science of Light at Erlangen in Germany. I had a stimulating discussion with each researcher in the group (eight people), and I gave a talk there. All our discussion was around Non-Hermitian systems and the exceptional point with application to sensing technology. We are planning to apply for a Humboldt fellowship together, so that I can come to the Max Planck Institute to pursue our collaborative work on sensing application and other research questions regarding Non-Hermitian physics. This initiative, which focuses on sensor matters and open quantum systems, may be a nice opportunity for my future students regarding their research careers.

To realize the full potential of Fellows

To realize the full potential of the Fellows at Wiko, it could be nice to put in place some resources to attract more and more natural scientists. Such resources can be scientific software, a supercomputer or server, or any other material in that sense.

Another point to consider is to welcome the Iso Lomso Fellows at the beginning of the year, so that they get to know the experienced Wiko Fellows from the beginning. When the young Iso Lomso Fellows arrive at the middle of the year, it is somehow difficult for them to integrate.