

FELLOW'S EXPERIENCES REPORT

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In 2019, I was awarded a JSPS Postdoctoral Fellowship for research in Japan, hosted by Prof. Jörg Brendle at Kobe University. My research area is set theory, a branch of mathematical logic which investigates fundamental problems about the nature of infinity. Are there different infinities? How do we count them? *Cardinal invariants* are an effective tool to measure infinite sets and ask questions about them. More specifically, our project explored how set-theoretic objects known as *ultrafilters* can be effective in the study of cardinal invariants, while developing new methods to construct ultrafilters on several algebraic structures.

Kobe University, one of Japan's 86 national universities, has a lively research group in mathematical logic and statistics which hosted several JSPS fellows in the past. I am grateful I could develop my project in such a stimulating academic environment. Although I had planned to attend international conferences and present the outcomes of my work, in 2020 I was forced to rethink my plans. To overcome this challenge, I organized a weekly seminar series, featuring online talks by local members and international speakers.

My first piece of advice is to apply cultural sensitivity and be aware that Japanese education system and society may be completely different than expected. As every research group has its own dynamic, a little communication effort is required to overcome the language and cultural barrier. Secondly, I highly recommend to engage in the Science Dialogue programme to have hands-on experience of the Japanese education system. Indeed, in August 2020 I had the opportunity to present my research at a secondary school in Kagawa prefecture. The warm hospitality I received, together with the students' bright curiosity, made this an unforgettable experience. Finally, as further reading, I suggest Joel David Hamkins' delightful book "A Mathematician's Year in Japan", based on his experience as JSPS fellow at Kobe University.

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