

INTERNATIONAL EXCELLENCE FELLOWSHIPS

Experience Report 2020/2021

Name and title of fellow	Akira Miyazaki, PhD
Duration and time of research stay	Oct 4 – Nov 26, 2021
Host professor and host institute at KIT	Prof. John Jelonnek, IHM

Testimonial

My research field is
Particle physics, microwave engineering, applied superconductivity, particle accelerator
How my research field is going to affect the world of science?
My field, particle physics, has been a center of science for long time. After the discovery of the Higgs boson, apparently, we are losing a compass to proceed further. There remain a lot of fundamental questions in this field. My approach is to combine different fields, which were not conventionally used in particle physics, to find new pathways in particle physics. Technical development for particle physics generates applications in other fields as a by-product, such as synchrotron radiation source or new power plants.
My main finding / highlight during my research work at KIT was
Combining the competence in KARA facility and IHM can achieve a state-of-the-art dark matter science, as shown in the technical note (https://cds.cern.ch/record/2798112). Also, the frequency of 28 GHz for this experiment seems of great use at the KATRIN experiment in the future. The expertise in IMS complements another collaborator of mine at INFN Pisa.
I have chosen the Karlsruhe Institute of Technology because
KIT is the European authority of high-frequency microwaves, which I needed in my dark matter experiment. I knew Prof. Thumm at IHM in advance because he strongly supported my award in an international conference of microwaves (IRMMW-2012). We had a contact when we were both at Fukui University in Japan.

If you want to, you can give advice to the next fellows. What should they know about Karlsruhe, KIT and the International Excellence Fellowships program?

Karlsruhe is an excellent place to stay and work. The Campus Nord may not be very accessible without having a private car. In case the next fellows will work there, the international guest house is a good option because there exists a tram stop Muhlburger Tor next to it. Direct trams (S1 or S11) are available from there to Campus Nord twice in the morning.