Engineering

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Supported by the JSPS Short Term Invitation Fellowship program, I visited Japan from 16 July to 14 August 2013. The visit was hosted by Professor Izuru Takewaki at Kyoto University. During this period, I had had very comprehensive research discussions and had conducted specific research studies on optimal placement and design of nonlinear dampers for building structures together with Prof Takewaki and his colleagues at Kyoto University. According to the arrangement by Professor Takewaki, I visited the University of Tokyo and Keio University during the first week of August. At University of Tokyo, I gave a talk on "optimal nonlinear damper design" and discussed with Prof Yoshihiro Kanno about collaborative studies on applying advanced optimization methods to address the design problems for seismic protections. At Keio University, I gave a talk on "semi-active control of structural systems using nonlinear damping" and discussed with Prof Masayuki Kohiyama about how to improve the performance of the semi-active control based ground isolation system currently in operation for the building of Faculty of Science and Technology at Keio University. In addition, I also made brief visits to Prefectural University of Hiroshima (PUH) and Tokyo University of Agriculture and Technology (TUAT) to understand the research environment and on-going projects in the research labs led by Prof Yegui Xiao at PUH and by Prof Mingcong Deng at TUAT, respectively.

This is a very fruitful visit. The collaborative research works at Kyoto University have produced a new design algorithm and computer code for algorithm implementation; we have started to apply the algorithm to conduct nonlinear damper designs for seismic protection of buildings and are drafting a journal paper to publish the joint research outcome. New research collaborations with University of Tokyo and Keio University have been established. My research team at Sheffield has already started joint research studies with the research team at Keio to develop a new semi-active control approach to improve the performance of the current ground isolation system for the Faculty of Science and Technology building at Keio.

All universities that I have visited during the fellowship have sufficient funds to support scientific research. Academic staff have no worry for the support and can focus on achieving great research outcomes, which have given me an excellent impression. The research laboratory based organisation in universities in Japan is a very good system. Final year project students, master students, and PhD students work in the laboratory for their research projects everyday under the supervision of their professors. This can ensure students to obtain regular supports from professors and also encourage students to help each other to work as a group. More importantly, students have a relatively long period to work on a research project in such a good environment. This makes scientific research work be a very important part of their career, from which they can benefit forever.

Overall, the visit is highly rewarding, which has strengthened my collaboration with Prof Takewaki at Kyoto University, produced the opportunities for my research team to conduct new joint research studies with professors at the University of Tokyo and Keio University, and for the first time, let me have a great opportunity to share research and life experience with colleagues in Japan.



Prof Lang (left) is working with Prof Takewaki at Kyoto University Prof Lang is at University of Tokyo together with Prof Kanno (left) and Prof Kohiyama (right)