Division of Environmental Design	Research field	Earthquake Engineering in Urban City	Lab. ID ED05

Laboratory web site

Research subjects

1. Countermeasures of Lifeline Facilities against Natural Hazards
Damage analysis of buried pipelines in several natural disasters, countermeasures of pipeline against liquefaction, fault movement, landslide so on are focused on. The effects of long period and long duration earthquake motion on performance of lifeline system just after an earthquake is also studied.
2. Estimation of Damage to Traditional Wooden Houses Induced by Earthquake
Earthquake force acting on the houses and seismic resistance of the houses should be estimated precisely in order to estimate the damage to traditional wooden houses. Magnitude of ground vibration at a target site can be estimated by using microtremor. Seismic resistance of houses is evaluated through 3D dynamic structural simulation.
3. Evaluation of Seismic Safety and Retrofitting of Historical Masonry Structures
Seismic safety of historical masonry structures is evaluated by field investigation, shaking table tests and dynamic structural simulations. Retrofitting method is also proposed based on the results of evaluation of safety. Seismic safety of retaining wall is also studied by using a similar method.

Master/Doctor course: Education policy, curriculum, typical activity in the laboratory

We hold research meetings of our laboratory twice in a week. We hold joint seminars with earthquake engineering laboratories of Kyoto University and Kobe University twice in a year in order to exchange new research outcomes and discuss them. Students must attend academic conferences and present their research outcomes in several times in a year. Students of Doctor course must present their research outcomes at an international academic conference once at least.

Daily life in the laboratory, etc.

Personal working desk with a personal computer is available for every students. All students of undergraduate, Master, Doctor researchers share the laboratory rooms, and every free discussion are strongly encouraged. Many laboratory activities are organized like, welcome party for new comers, BBQ party, summer excursion, jogging, onsen (hot spa) and beer party, year end party, etc. A trademark phrase of our laboratory is ″Study hard and play hard″.

Message or comments by the laboratory faculty staffs

Research of our laboratory focuses on not only urban seismic problem but also several kinds of hazards, such as heavy snow, heavy rain, typhoon, volcano, etc. Research subject of each student is decided by discussion of faculty staffs and students. So students should explain their research plan at first.

Recent Master theses in these 3 years (+ more if appropriate)

year.month	Thesis title (including English translation of Japanese thesis title)
2017.3	Analysis of the best escape route from tsunami after earthquake by using multi agent system – case study in harbor district of Wajima City –
2017.3	Development of liquefaction countermeasure technique for existing residential houses –damage investigation in Kumamoto Earthquake and model vibration tests –
2017.3	Analysis of collapse behavior of stone masonry wall in the Kumamoto castle
2016.9	Study on Out-of-plane Behavior of Masonry Brick Walls Reinforced with In-filled Fiber Concrete Subjected to Static Loading
2016.3	Estimation of Strong Ground Motions at the Monastery of St. Stepanos Using Stochastic Green's Function Method
2016.3	Damage Analysis of Water Supply System in Heavy Rain and Its Countermeasures
2016.3	A study on heterogeneity degree coefficient of ground in the seismic design code of drinking water pipe using the average shear wave velocity
2016.3	The influences to ishibadate base of Takayama-style traditional wooden house by 3D earthquake response analysis
2016.3	Estimation of underground structure around the St. stepanos monastery in Iran by using micro vibration
2016.3	Estimation of strong motion by using microtremor H/V spectral ratio for the 2014 Northern Nagano Prefecture Earthquake
2016.3	The causes of the damage to air valves on drinking water pipes during earthquakes

2015.3	Availability of Measurement of Underground Water Table in Decision Making of Evacuation in Geo-disasters
2015.3	Earthquake Response Characteristics of Library Bookshelfs Considering Fall of Book
2015.3	Three-dimentional Earthquake response analysis of traditional wooden houses
2015.3	Estimation of Strong Motion Using Microtremor H/V Spectral Ratio in Considering Magnitude of Earthquake
2015.3	Experiments and Numerical Analysis of Seismic Behavior of Kenchi-block Retaining Wall Model
2015.3	Seismic Response Analysis of Wooden Houses in Considering Restraint of Deposited Snow around House
2015.3	Experimental Study of Seismic Countermeasures of Brick Wall Model in Developing Countries
2014.3	Damage Mechanism of Sloshing Phenomena in Water Reservoir Tanks Due to Long Period - Long Duration Earthquake Ground Motion
2014.3	Modification of Damage Evaluation Method of water Supply Pipelines by Using Damage Data of Recent Earthquakes
2014.3	Optimum Distribution of Evercuation Camps of Wajima City by Using Evacuation Simulation from Tsunami
2014.3	Seismic Behavior and Seismic Retrofitting of Stone Lanterns in the 2011 off the Pacific Coast of Tohoku Earthquake
2014.3	Estimation of Strong Motion Using Microtremor H/V Spectral Ratio
2014.3	Analytical Study of Seismic Behavior of Kenchi-block retaining Wall Model
2013.3	Three-dimentional Earthquake Response Analysis of Traditional Wooden Houses in the North Nagano Prefecture Earthquake
2013.3	Analysis of Performance of Medical Facilities in the Great East Japan Earthquake Disaster
2013.3	Damage Analysis of Water Supply System in the Great East Japan Earthquake Disaster
2013.3	Experimental Study of Seismic Behavior of Brick Wall Item in Developing Countries
Recent Doctoral theses in these 3 years (+ more if appropriate)	
year.month	Thesis title (including English translation of Japanese thesis title)
2015.9	Seismic hazards and damage assessments based on remote sensing and GIS technologies
2015.3	Study of Risk Communication in Geo-disasters and Visualization of Evacuation Information
2015.3	Study of Behavior ofJointed Ductile Iron Pipelines Buried across Fault
2014.9	In-Plane Seismic Behavior of Fiber Concrete Filled Masonry Brick Walls
2014.9	Sloshing Phenomena in Water Reservoir Tanks Due to Long Period - Long Duration Earthquake Ground Motion
2014.3	Risk Communication and Evacuation Simulation for Tsunami - in Case of Wajima Area in Wajima City _
2013.3	Strong Ground Motion Prediction for Tehran Region, Iran
2013.3	Study of Ununiformity Coefficient of Seismic Design of Water Supply Pipelines
2013.3	Study of Prediction of Landslide Potential Induced by Earthquakes
2013.3	Study on Disaster Mitigation in Crowded Urban Areas by Improving Houses
2013.3	Response of Segmented Buried Pipelines Subjected to Reverse Fault Movement
2013.3	Estimation of Effects of Long Period Earthquake Ground Motion to High-rise Buildings at Hanoi and HoChiMinh Cities, Vietnam
Laboratory mail address	Masakatsu MIYAJIMA <miyajima *at* se.kanazawa-u.ac.jp>