

■ 第 1 回 2021 年 5 月 13 日

川口研究室

- 発表者：李陽洋
- タイトル：2021 年 2 月 13 日の福島県沖の地震による大規模集客施設における天井落下被害に関する調査報告
- 要約：川口研究室では 2021 年 2 月 13 日に発生した福島沖の地震の建物被害調査を行った。
- 調査対象建物は、仙台市内に位置する公共ホール、公共体育館 1、福島市内に位置する公共体育館 2、の計 3 ヶ所の大規模集客施設であり、いずれの施設も震災後数日間にインターネット等で天井材の被害が報告されていた。

- Speaker : Yangyang Li
- Title: Survey report on ceiling fall damage at large-scale customer attraction facilities due to the earthquake off the coast of Fukushima Prefecture occurred on February 13, 2021
- Content : Kawaguchi Lab conducted a building damage survey for the earthquake off the coast of Fukushima on February 13. We have been to three facilities, including a public hall and a public gymnasium located in Sendai City, and a public gymnasium located in Fukushima City. They are large-scale customer attraction facilities, and damage to the ceiling material was reported on the Internet within a few days after the earthquake.

- 発表者：幸田雄太
- タイトル：天井損傷部を発見するための Saliency map
- 要約：現在は目視による点検が主に行われているが、広大な面積に対して目視による点検は見落としが多い。また、地震後に施設の即時利用が求められる場合は、より短時間で確実な安全確認の方法が求められる。短時間で確実な安全確認を行うために、損傷部の可視化と評価を行う WEB アプリケーションの開発を行った。

- Speaker : Yuta Koda
- Title: Saliency map for detecting damage area of ceiling

- Content : Currently, visual inspections are mainly performed , but visual inspections are often overlooked for a vast area. In addition, when readily available use of facilities is required after an earthquake, a method for reliable safety confirmation in a shorter time is necessary. In order to confirm safety in a short time, we have developed a WEB application that visualizes and evaluates damaged area.

沼田研究室

- 発表者 : Chaitanya Krishna
- タイトル : "Numerical Modelling of Tunnels with 2D-Applied Element Method"

■ 第2回 2021年7月8日

桑野研究室

- Speaker: Daichi Yokoyama (M2)
- Title: Simple model test on the stability of cavity -What affects the formation of arch? -
- Abstract: Subsurface cavities cause cave-in disaster and therefore research on the stability of cavity is important for developing a resilient society. Soil arching is a key phenomenon to prevent such cave-in disaster. Previous research has revealed that matric suction (i.e. capillary force between soil particles) is essential for the formation of a cavity. Besides, shapes and surface roughness of soil grain are reported to affect the formation of soil arch and thus the stability of a cavity based on model tests and discrete element method (DEM) analysis. However, our understanding on the effect of soil properties on the stability of cavity has been poorly understood to date. In the current research, firstly, suction measuring tests on relatively coarse sandy soils are conducted with a newly developed apparatus. Secondly, simple model tests focusing on the cavity stability are conducted where both the matric suction and material properties (e.g. shapes and surface roughness) are varied to discuss the formation of arch. In this presentation, I will explain the roles of matric suction and soil arching on the stability of a subsurface cavity.
- Speaker: Sanjei Chitravel (D2)
- Title: Effects of internal erosion on the cyclic and post-cyclic mechanical behaviour of reconstituted volcanic ash
- Abstract: Internal erosion is the transportation of soil particles from within or beneath a water-retaining structure due to the seepage flow, which impacts soil's mechanical and hydraulic behaviour. The present study investigates the impact of internal erosion on the cyclic and post-cyclic mechanical behaviour of volcanic ash sampled from Satozuka, Hokkaido, Japan. A series of element tests using volcanic ash with loose, medium, and dense conditions have been performed to investigate the post-erosion undrained behaviour of volcanic ash during cyclic loading and monotonic loading afterward. Further, post-cyclic reconsolidation was considered to study the impact of reconsolidation on post-cyclic mechanical behaviour. The results show that the cyclic resistance of eroded specimens is improved regardless of the percentage of eroded fines and

initial relative density. The higher cyclic resistance for the eroded specimens is found to be due to a decrease in the intergranular void ratio after the erosion, fabric changes, and pre-strain history during erosion, supported by literature-based evidence. Cyclic loading induced reduction in post-cyclic critical state friction angle (φ_{cri}) and peak stress ratio ($R_{peak} = (q/p')_{peak}$) is higher in eroded specimens. However, reconsolidated eroded specimens show increases in φ_{cri} and R_{peak} , which are still lower than non-eroded and eroded specimens without cyclic loading, which could be due to damage of the soil fabric during cyclic loading and positive impact of erosion disappears after cyclic loading. Such limited recovery of deviatoric stress with deformation is density dependent.

清田研究室

- 発表者：志賀正崇
- タイトル：Effect of soil fabric on liquefaction characteristics in volcanic and silty sandy soils

■ 第3回 2021年10月27日

腰原研究室

- 発表者：杉本純也, 腰原幹雄 (SUGIMOTO Junya, KOSHIHARA Mikio)
- タイトル：耐震性能の観点による木造住宅の分類と標準荷重変形関係の算定法の提案
A Proposal for Classification of Wooden Houses Based on Seismic Performance and Calculation Method of Standard Load-Deformation Relationship

中埜研究室

- 発表者：S.M.Naheed Adnan(D2)
- タイトル：Out-of-plane force resisting mechanism of URM infill walls: Shake table test plan

■ **第4回 2022年2月14日**

- 発表者： Mahai BO (D1)
- タイトル： Dynamic structure-soil-structure interaction of pile groups among structures: a parametric study