

第 14 回フロンティア材料研究所講演会

Seismic response of reinforced concrete walls – open questions after the earthquakes in Chile and New Zealand

日時：2016年9月15日（木）15:00～17:00

講師：Katrin Beyer（スイス連邦工科大学ローザンヌ校）

題目：Seismic response of reinforced concrete walls – open questions after the earthquakes in Chile and New Zealand（英語講演）

会場：すずかけホール 2F 集会室 2

Speaker: Prof. Katrin Beyer (École Polytechnique Fédérale de Lausanne)

Date: 15:00 - 17:00, Thursday, September 15th

Title: Seismic response of reinforced concrete walls – open questions after the earthquakes in Chile and New Zealand

Abstract:

Recent earthquakes in Chile (2010, M 8.8) and New Zealand (2011, M 6.3) have shown that, despite many years of extensive research and subsequent design code advancements, several modern reinforced concrete walls underperformed or even failed during these seismic events. Many of the walls that were damaged were non-rectangular walls or part of core walls, while past research had focused on walls with rectangular cross-sections. The observed wall failures included in particular compression failures and out-of-plane instabilities and triggered new research programs all around the world. This presentation presents two ongoing research projects at EPFL that address the seismic performance and design of reinforced concrete core walls. In the first project, the behavior of core walls when subjected to different loading directions is examined. Based on experimental and numerical studies, it is argued that the diagonal loading direction is the most critical one—although it is often neglected in design. In the second project, the out-of-plane failure mode of reinforced concrete walls is investigated. Recent EPFL wall tests were the first tests where the entire displacement fields of walls that developed large out-of-plane displacements were recorded by means of optical measurements. This novel data allowed new insights into this failure mechanism and the presentation highlights new findings and open research questions.

Bio: Katrin Beyer is Assistant Professor at the École Polytechnique Fédérale de Lausanne (EPFL) in Switzerland and head of the Earthquake Engineering and Structural Dynamics Laboratory (<http://eesd.epfl.ch>). After completing her undergraduate studies at the Federal Institute of Technology in Zurich (ETHZ), she worked for two years for the consulting firm ARUP in London, UK, on projects related to structural dynamics, impact and seismic analysis. She received her PhD from the University of Pavia, Italy. Her research interests include the seismic behaviour of reinforced concrete walls and of unreinforced masonry structures and large-scale structural testing.

