

KAWAGUCHI LAB.

[Safety Assessment of Ceilings and Spatial Structure Systems]

Department of Human and Social Systems

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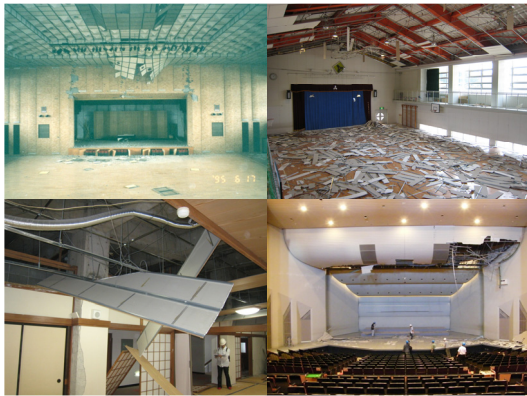
Building Structure, Space Structure

Department of Architecture, Graduate School of Engineering

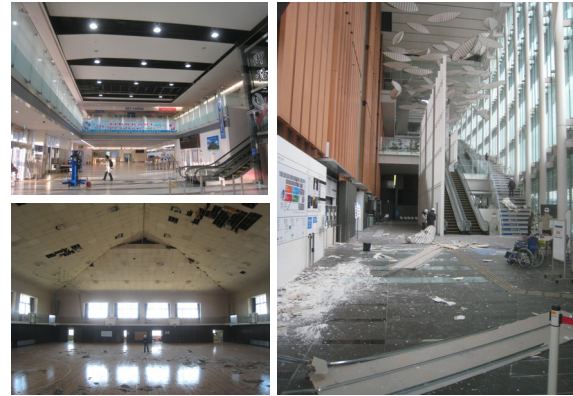
Safety of Large Roof Buildings

Ceilings in large roof buildings such as gymnasiums and halls tend to be high and large. In the buildings, however, falling of ceiling panels and lighting equipment have often occurred irrespective of earthquakes. If once small damage to the ceiling was found, the buildings cannot serve as shelters which are frequently requested functions during disasters.

During the main and after shocks of the East Japan Earthquake on March 11, 2011, failures of non-structural components had occurred in many large roof buildings. Harming people due to the falling of ceiling panels had occurred as well. We have been investigating the safety of large roof buildings and developing the method to prevent the falling of ceilings.



Damage to non-structural components during past earthquakes (UL: South Hyogo Prefecture Earthquake (1995), UR: Noto Hanto Earthquake (2007), LL: Iwate-Miyagi Nairiku Earthquake (2008), LR: Earthquake in the north shore of Iwate Prefecture (2008))



Failure of ceiling systems during the East Japan Earthquake

Structural Performance of Buildings

We have been researching and developing various buildings which practically use advantages of spatial structure.



Safety assessment of ceilings by dropping experiments



Ceiling reinforcement using cable

