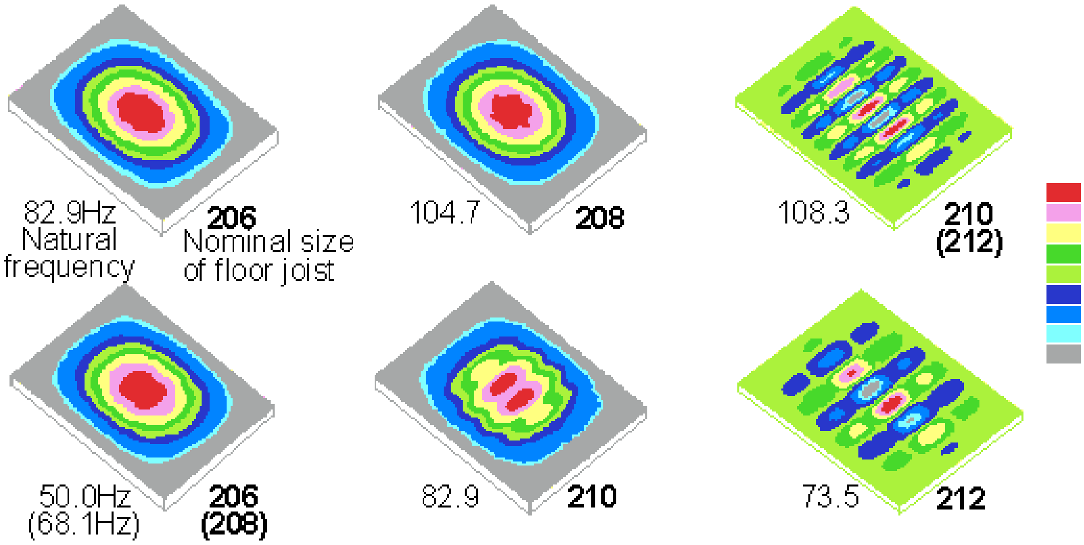
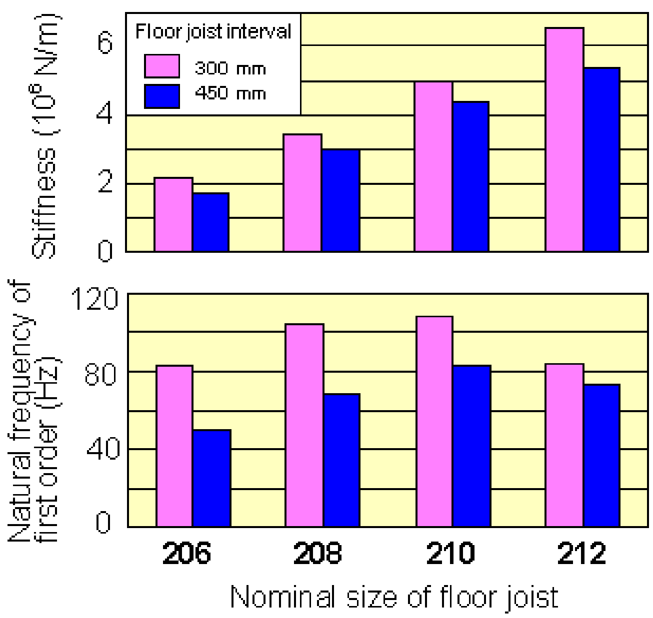
Analysis of Vibration Modes and Stiffness of Wooden Floor Using FE-method

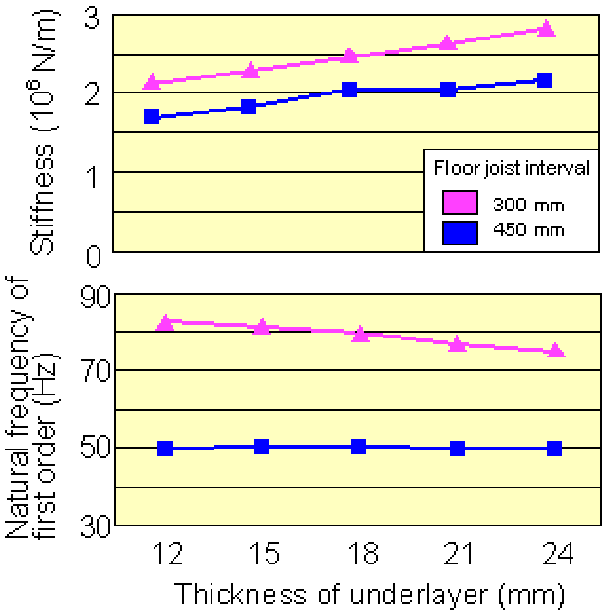
One of the most important problems of wooden house is the floor impact sound. Especially, the heavyweight impact sound relates to the floor construction and stiffness. But it costs time and effort to experiment on the mock-up. Then we analyzed the stiffness and the vibration modes of wooden floor in two-by-four construction using FE-method. We also analyzed the effect of the model construction and material.



Effect of the nominal size of floor joist to vibration (upper : floor joist interval 300mm, lower : 450mm)



Relationship between size of floor joist and stiffness, natural frequency



Relationship between thickness and stiffness, natural frequency