

Study on diagnosis of structural health and advance of structural safety based on dynamical models

Akira Mita

The papers that won the AIJ prize deals with diagnosis of structural health and advance of structural safety. They are based on analyses or experiments on the basis of deep knowledge on dynamics. Advanced theories such as control theory, pattern recognition and system identification have been extensively used combined with conventional structural dynamics and wave propagation theories. The dynamical behavior of buildings was treated not only as vibration systems but also as wave propagation phenomena. Most papers were written in English and have been well recognized by leading researchers in other countries.

The papers are categorized into three: 1) Soil-structure interaction, 2) Vibration control of tall building and 3) Structural health monitoring. In the "Soil-structure interaction" category, a new hybrid analysis method and a new experiment method based on impulse excitations were proposed. In "Vibration control of tall building" category, a new vibration control system named as mega-sub control system was proposed. In "Structural health monitoring" category, many new diagnosis methods and structural health monitoring systems were proposed and developed.