A measurement of microtremors in the castle tower of Matsue Castle before and after seismic retrofitting

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In order to obtain basic data on the vibration characteristics of the castle tower by the traditional construction method, we performed the measurement of microtremors in the castle tower of Matsue Castle before and after seismic retrofitting. In the horizontal vibration mode, the natural frequency increased by 2-9% after seismic retrofitting, but there was almost no change in the mode shape. We calculated the horizontal story stiffness of the building using the measured data. As a result, it was found that the story stiffness was generally increased after seismic retrofitting. The change in the damping factor after seismic retrofitting was small, with a value of about 1.1 to 1.5% for the 1st mode and 2nd mode in the horizontal direction, and a value of about 2.0 to 3.3% for the 3rd mode.