

**Identification Method of the Natural Frequency Based on the Microtremor
Measured at Both Sides of a Bridge Pier**

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The peak of the Fourier spectrum of the bridge piers from the microtremor does not appear clearly in many cases, unlikely that from the impact vibration test. Also, the microtremor does not contain effective phase information, which makes it inferior to the impact vibration test in the specification of natural frequency. In order to solve this problem, we focused on the relation between the vertical direction and the sleeper's direction of the microtremor which is measured at both ends of the top of the pier. We have estimated the ground vibration just below the pier from these microtremor of the pier, and proposed a method of estimating the natural frequency by evaluating the Fourier spectrum ratio and the phase difference between the ground vibration estimated and the vibration of the pier. This method has a possibility of leading to the improvement in the identification accuracy of the natural frequency.