

# Measurement of Tire/Wheel Vibrations During Rolling Using Compressed Sensing DIC

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Vibration measurement of rotating bodies is performed using LDV and other methods, but there is a problem of missing spatial information. Recently, an image vibration measurement method using Digital Image Correlation (DIC) has been developed, but there are issues such as increased cost due to the necessity of high-speed (HS) cameras and reduced resolution. In this study, we applied Compressed Sensing DIC (CS-DIC), a method that achieves high-speed vibration measurement using a high-resolution low-speed camera by supplementing time information using compressed sensing. As shown in Figures 1 and 2, it was demonstrated that the CS-DIC can measure the amplitude of the rotational frequency components of the tire and wheel, as well as their spatial modes.

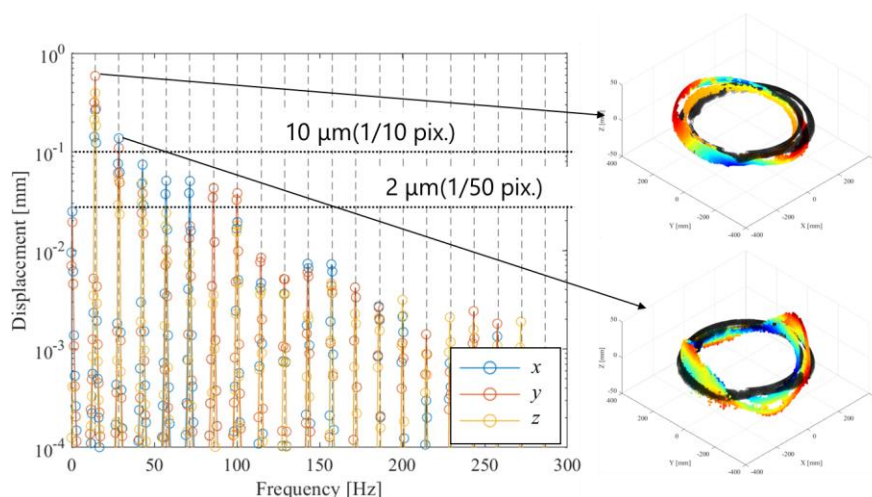


Fig.1 Vibration measurement results during tire drive using CS-DIC

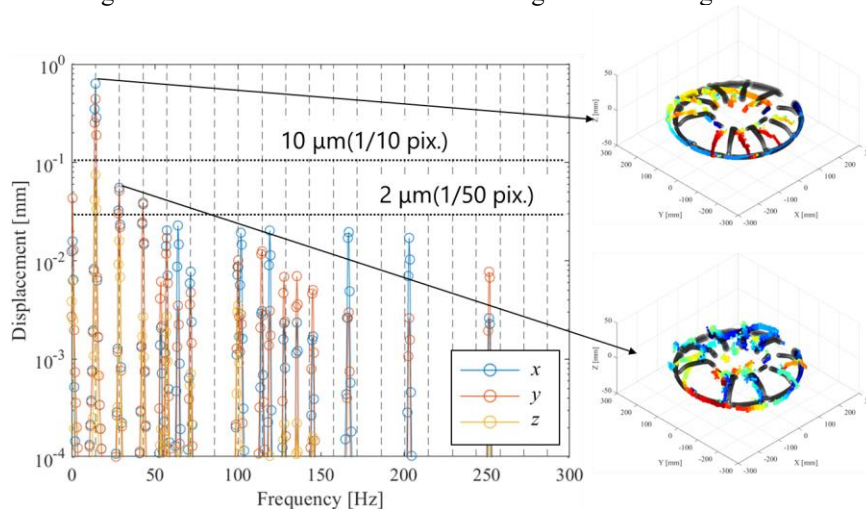


Fig.2 Vibration measurement results of wheel during drive using CS-DIC