研 究 論 文

振動速度情報を用いた超音波イメージングの一方法

今 野 和 彦,* 佐 藤 博 仁*

A New Ultrasonic Imaging Method in Air Using Vibration Velocity at an Object

Kazuhiko IMANO† and Hirohito SATO†

A new ultrasonic imaging method by detecting the surface vibration velocity of a sample placed on the piezoelectric transducer is described. Surface vibration velocity of a sample is optically observed and their simulation is also performed to confirm the necessity of constant voltage drive in generating arbitral velocity waveforms on the surface of piezoelectric transducer. To demonstrate the possibilities of ultrasonic imaging, characters on an object was imaged by measuring the difference in surface vibration velocity between the object and the piezoelectric transducer. An experiment for an aluminum sample shows the effectiveness of our method in non-contact ultrasonic imaging in air. The experimental results suggested that the spatial resolution of the proposed system depend on the spot size of laser light of Doppler vibrometer is also described.

Key Words : ultrasonic imaging, vibration velocity, constant voltage drive, piezoelectric transducer