

固液混成系の音波物性研究

Acoustic properties of solid-liquid hybrid system

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受け入れ教官：米田 明

米田が年度途中で名古屋大学理学部から当センターに転勤したため、担当していた 4 年生の卒業研究を完成させるため、野村に来所してもらった。書類上、野村の来所は 1 回であるが、実際には 2 回来所している。1 回目の来所費用は名古屋大学が負担した。当人は卒業研究を完成させ卒業した。以下に、卒業論文題目と要旨を引用しておく。

The application of ACROSS to laboratory measurement of acoustic properties of water with bubble.

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Abstract.

An approach based on ACROSS was applied to laboratory measurement of acoustic properties to examine its practical applicability. I used water with bubbles as a sample, which has been strongly attracted in volcanic seismology as a source of the volcanic earthquakes. The frequency response was determined by using the amplitude and phase differences between the input and output continuous sinusoidal waves. The cepstrum analysis based on the inverse Fourier Transform shows a clear reconstruction of the first arrival pulse. Although its travel time show no considerable changes, its peak amplitude systematically changed according to bubble contents and frequency bands examined. Such changes can be interpreted as a change of anelasticity of bubbly water. All these results strongly suggest the practical applicability and power of ACROSS approach to laboratory measurement of acoustic properties.