Experimental Determination of Scattering Coefficients: A Scale Model Approach

by

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ABSTRACT

A scattering coefficient is a value that defines the reflected sound energy that is not included in the specular reflection from a certain material or surface. The method for measuring and determining scattering coefficients using a reverberation chamber has raised many questions. This thesis identifies some of those questions and tests the validity of the procedure. The material of a surface has been overlooked as an important variable in the techniques used to calculate a scattering coefficient. This paper describes tests done to prove the importance of this variable. Said tests were performed to assess the conventional method used for calculating scattering coefficients. It was discovered that the absorptive properties of the test sample had to be included when determining a scattering coefficient. When a sample becomes too absorbent the tested technique breaks down and gives an inaccurate value. This work includes a correct approach to building a scale model reverberation chamber and investigates how to accurately scale the measured data to establish a precise scattering coefficient.