

Experimental Approach for Determining Hemi-Anechoic Characteristics of Engineering Acoustical Test Chambers

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Abstract : An experimental methodology is proposed for determining hemi-anechoic characteristics of an engineering acoustic room built at the facilities of Universidad Nacional de Colombia to evaluate the free-field conditions inside the chamber. Experimental results were compared with theoretical ones in both, the source and the sound propagation inside the chamber. Acoustic source was modeled by using monopole radiation pattern from punctual sources and the image method was considered for dealing with the reflective plane of the room, that means, the floor without insulation. Finite-difference time-domain (FDTD) method was implemented to calculate the sound pressure value at every spatial point of the chamber. Comparison between theoretical and experimental data yields to minimum error, giving satisfactory results for the hemi-anechoic characterization of the chamber.

Keywords : acoustic impedance, finite-difference time-domain, hemi-anechoic characterization

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