研究室名	黒沢研究室　学会発表

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演題名	Acoustic analysis of automobile cabin space assuming in-vehicle speakers
発表者	○黒沢 良夫、澁谷康平、笹島学、渡邉光春
内容	FE models used for measurement of transmission loss and impedance tube were created by using an acoustic metamaterial in which films were laminated on top and bottom of polypropylene (PP) processed into a honeycomb structure. Numerical calculation of sound transmission loss, comparison with experimental results, and various parameter studies were conducted. In the calculation of the transmission loss of the FE model of the impedance tube (Φ 100mm), it was possible to obtain a value close to the experimental result by changing the value of the spring stiffness which is the boundary condition. The attenuation of the boundary spring has no effect on the transmission loss of the 300 mm × 300 mm FE model. The hardness of the spring affects the low frequency stiffness line and the first dip (about 100Hz). The first dip is the effect of the vibration mode in which the entire honeycomb deforms out of plane. There is no effect in the frequency range higher than the drop frequency. Attenuation of honeycomb material has a great influence. The larger the value, the larger the transmission loss in all frequency ranges. The film attenuation affects the first dip (about 100Hz) and the second dip (about 2300Hz). The drop of about 2300 Hz is due to the film resonance of the film. When the Young's modulus of the film is increased, both the frequency and the value of the initial drop increase. There was almost no change in the frequency range higher than the drop frequency.