DIFFUSION MODELLING AT THE BOUNDARY OF A DIGITAL WAVEGUIDE MESH (MonPmOR11)

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Abstract :

The digital waveguide mesh is a method used to simulate the propagation of sound waves in an acoustic system. In order to accurately model such systems, it is important to model the reflection characteristics at the boundaries. A significant property of an acoustic boundary is its diffusivity. This paper presents a new approach to modelling diffusion, built upon a previous method that uses circulant matrices to vary the angle of incident waves prior to reflection. The new model is designed to eliminate the rotation error, inherent in the existing model. The results show that it offers diffusion that is more consistent at different frequencies, as well as a more linear and accurate control over the amount of diffusion, particularly when modelling boundaries with low diffusivity.

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