

## Optimization of a Cone Loudspeaker Parameter of Design Parameters by Analysis of a Narrow Acoustic Sound Pathway

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**Abstract :** This study tried optimization of design parameter of a cone loudspeaker unit as an example of the high flexibility of the products design. We developed an acoustic analysis software program that considers the impact of damping caused by air viscosity. In sound reproduction, it is difficult to each design the parameter of the loudspeaker. To overcome the limitation of the design problem in practice, this paper proposes a new an acoustic analysis algorithm to optimize design the parameter of the loudspeaker. The material character of cone paper and the loudspeaker edge was the design parameter, and the vibration displacement of the cone paper was the objective function. The results of the analysis were compared with the predicted value. They had high accuracy to the predicted value. These results suggest that, though the parameter design is difficult by experience and intuition, it can be performed comparatively easily using the optimization design by the developed acoustic analysis software.

**Keywords :** air viscosity, loudspeaker, cone paper, edge, optimization

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