ANALYSIS AND OPTIMIZATION OF FREQUENCY RESPONSE OF ELECTRODYNAMIC SPEAKER DRIVER

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ABSTRACT

This project analyses an electrodynamic speaker driver developed by Børresen Acoustics in order to model the frequency response and improve the existing design. This is done through finite element analysis.



Figure 1: Left: Axisymmetric view of the Børresen Acoustics speaker driver. Right: Moving components of the speaker driver.

The construction of the speaker driver can be seen on Figure 1. The speaker driver features a sandwich structure membrane with a honeycomb core and thin carbon fibre face sheets. The proper choice of material properties and element technology for such composite structures will be discussed in this project.

Børresen Acoustics has measured the frequency response of the electrical impedance and has found 3 resonance frequencies, where the first resonance frequency is at 40Hz and second and third at 1500Hz and 4500Hz respectively. The scope of the project is to identify the cause of the second and third eigenfrequencies and if possible, mitigate the effect of these.

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