

# Fully Symmetrical Single-Suspension Electrodynamic Loudspeaker Using a Halbach Array

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## Abstract

Invented at the end of the XIXth century, the electrodynamic loudspeaker has not much changed since then. Although the materials have greatly evolved, the geometry and the transduction principle have remained the same. However, in many applications, the bulkiness of the driver behind the membrane and the asymmetry that it brings are major drawbacks of the classical architecture. The search for a very flat loudspeaker has also been very motivated by several industries. In this paper, we introduce a new kind of flat, purely symmetrical with regards to the membrane, single suspension Halbach array loudspeaker. We show here simulations results using the Acoustics, Solid Mechanics and AC/DC modules of COMSOL Multiphysics®, studying the complete behavior of our design. These simulation results show promising performance of our loudspeaker prototype.

## Figures used in the abstract

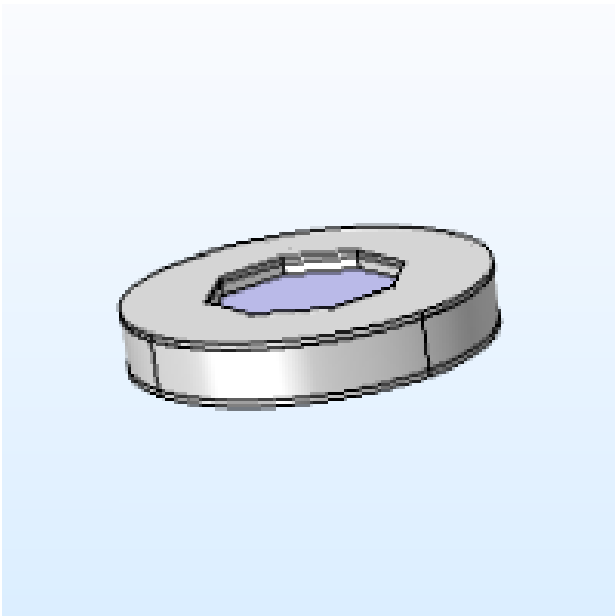


Figure 1: Loudspeaker prototype.