

## Ultrasonic beam steering using Neumann boundary condition in multiphysics

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Abstract

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**Abstract** The traditional one-dimensional ultrasonic beam steering has time delay and is thus a complicated problem. A numerical model of ultrasonic beam steering using Neumann boundary condition in multiphysics is presented in the present paper. This model is based on the discrete wave number method that has been proved theoretically to satisfy the continuous conditions. The propagating angle of novel model is a function of the distance instead of the time domain. The propagating wave fronts at desired angles are simulated with the single line sources for plane wave. The result indicates that any beam angle can be steered by discrete line elements resources without any time delay.

**Keywords:** Ultrasonic beam steering Desired angle Line element time-delay

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