

A fast and accurate tool for calculation of characteristics of Capacitive Micromachined Ultrasound Transducers (CMUT)

Tuesday, 31 October 2023 16:00 (15 minutes)

The work is dedicated to development of a new MATLAB based tool for calculation of characteristics of MEMS devices, particularly Capacitive Micromachined Ultrasound Transducers (CMUT).

Main features of the created program is ability to calculate a frequency response of an array of circular cells and its radiation pattern in a transmitter mode, without use of finite or boundary elements. It also provides a user with information about collapse voltage (maximum allowed DC voltage to apply), eigenfrequencies and eigenmodes, and displacement profile under applied voltage (DC+AC). It provides a simple interface, high calculation speed and sufficient accuracy in comparison with conventional finite elements method (FEM). Thus, it does not require presense of sophisticated software for FEM.

The presentation is going to include explanation of the algorithm's principles and comparison of its results with other numerical methods.

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