

A MATHEMATICAL MODEL OF AN ARTIFICIAL COCHLEA BASED ON AN ARRAY OF RESONATORS

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Abstract: *This work considers using of an array of resonators for non-stationary signal decomposition. A simple mathematical model of the array of resonators which is compound from masses with springs is presented and described in this paper first. Subsequently spectrograms of known test function for different values of viscous damping and for different values of connection spring stiffness calculated by the mathematical model of the array of resonators are presented. After the verification of the mathematical model by the known test signal also spectrograms of random non-stationary signal were calculated and they are also presented in this paper. The results showed that the array of resonators is able to decompose whatever non-stationary signals in very good quality if suitable damping of resonators and interaction between resonators is used.*

Key words: *cochlea, signal, decomposition, resonators, model*



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