UNIVERSITÀ DEGLI STUDI DI BRESCIA

DIPARTIMENTO DI INGEGNERIA CIVILE, ARCHITETTURA, TERRITORIO, AMBIENTE E DI MATEMATICA

The problem of neutral inclusion as a spectral R-linear problem

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Abstract. A boundary value problem is stated with the spectral parameter on the boundary. Complex potentials are introduced in the considered domain through analytic functions. Next, the boundary value problem is reduced to a spectral problem for a functional Equation that has been solved. Equal and different contrast parameters are considered. Using the classic theory of self-adjoint operators in Hilbert space, we write the complete set of eigenvalues and eigenfunctions.

In the present work, we consider the problem of neutral inclusion as a spectral R-linear problem for the classic Hashin assemblage represented by an annulus on the complex plane. The problem is solved by reduction to an iterative functional equation. It is established that the theory of neutral inclusion related to metamaterials may be considered a new type of spectral problem when the spectral parameter is in the conjugation condition.

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