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On determination of functional-differential pencils on closed sets from the Weyl-type function. (English) [Zbl 1459.34175]

Summary: Second-order functional-differential pencils on closed sets are considered with nonlinear dependence on the spectral parameter. Properties of their spectral characteristics are obtained and the inverse problem is studied, which consists in recovering coefficients of the pencil from the given Weyl-type function. The statement and the study of inverse spectral problems essentially depend on the structure of the closed set. We consider an important subclass of closed sets when the set is a unification of a finite number of closed intervals and isolated points. In order to solve the inverse spectral problem for this class of closed sets, we develop ideas of the method of spectral mappings. We also establish and use connections between the Weyl-type functions related to different subsets of the main closed set. Using these ideas and properties we obtain a global constructive procedure for the solution of the nonlinear inverse problem considered, and we establish the uniqueness of the solution of the inverse problem.

MSC:
34K29 Inverse problems for functional-differential equations
34K08 Spectral theory of functional-differential operators
34N05 Dynamic equations on time scales or measure chains

Keywords:
functional-differential pencils; closed sets; inverse spectral problems

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References:

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