

Some approach to the moment problems

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Abstract

The report is devoted to representation of one approach to the theory of moment problems [1-9]. In this approach we at first prove the moment representation by the application of the theory of eigenfunction expansion by generalized eigenvectors to the corresponding operators. For such vectors we get a simple equation depending on considered moment problem; the solution of such equation gives the form of representation. The corresponding Parseval equality gives the moment representation. After this we connect with considered moments the Jacobi type three-diagonals block matrix which spectral measure is equal to the measure in the moment representation. Corresponding spectral theory of such matrix gives the further information about considered moment problem. Such approach gives the possibility to investigate the following moment problems: classical, classical strong, trigonometric, complex, matrix and different many-dimensional analogs of them, including infinite-dimensional cases (in many-dimensional situation it is necessary to investigate the commuting families of Jacobi type operators).

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