# Realization of Stieltjes and inverse Stieltjes families via boundary relations

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## Abstract

The classes of Stieltjes and inverse Stieltjes functions as introduced by M.G. Kreĭn consist of Nevanlinna functions that are holomorphic outside the positive halfline in the complex plane and take a fixed sign on the negative halfline. The unbounded and multivalued analogs of corresponding subclasses of the more general class of Nevanlinna families are defined and their realizations as Weyl families of boundary relations are studied. This yields extensions of the notion of a so-called positive boundary value space, which goes back to A.N. Kochubei. The main realization results give characteristic properties of boundary relations, whose Weyl families belong to the class of Stieltjes or inverse Stieltjes families. The results can be used for instance in studying nonnegative selfadjoint extensions of nonnegative operators and their spectral theoretic properties.

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