

Weyl functions and spectra

Dedicated to the memory of Vladimir A. Geyler

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Abstract in 1909 Weyl introduced the Weyl function in order to investigate Sturm-Liouville problems. Later his results were generalized and finally, in 1991, Derkach and Malamud associated a Weyl function to every self-adjoint extension A of a symmetric operator. They proved that also the general Weyl function is an operator-valued Nevanlinna (or Herglotz) function. Hence it admits the standard integral representation of Nevanlinna functions.

After an introduction I shall describe recent results on how to get information on the spectrum of the operator A with Weyl function M with the aid of the measure in the integral representation of M . In particular, I shall talk on the latest results by Vladimir A. Geyler on this topic. The talk will be completed by examples and links to inverse spectral theory.