Regularity of critical points of nonnegative operators in Kreĭn spaces

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We consider a nonnegative linear operator $\widetilde{A}$ in a Kreĭn space, which can be represented as a coupling of two Hilbert space symmetric and nonnegative operators S_+ and S_- with deficiency indicies $(1,1)$. Starting from the Veselič criterion of regularity of critical points 0 and ∞, we reformulate it in terms of the abstract Weyl functions m_+ and m_- of the operators S_+ and S_-. By Abelian and Tauberian theorems for Stieltjes integrals the problem of regularity of critical points is reduced in essential to the study of asymptotics of m_+ and m_-. The results are illustrated on some differential operators.

The talk is based on joint work with B. Čurgus.