Boundary relations and generalized resolvents of symmetric operators

S. Hassi

The Kreĭn-Naĭmark formula provides a parametrization of all selfadjoint exit space extensions of a, not necessarily densely defined, symmetric operator, in terms of maximal dissipative (in $\mathbb{C}_+$) holomorphic linear relations on the parameter space (the so-called Nevanlinna families). These parameter families can be interpreted as Weyl families of boundary relations, which were introduced in [1]. Using a coupling method of boundary relations (see [2]) the Kreĭn-Naĭmark formula for the generalized resolvents corresponding to the given parameter families can be easily constructed. This approach can be used to investigate various problems involving generalized resolvents and their applications; for instance, an old problem, going back to M.A. Naĭmark, concerning the analytical characterization of so-called Naĭmark extensions is solved.

The talk is based on a joint work with V.A. Derkach, M.M. Malamud, and H.S.V. de Snoo.

References

[1] V.A. Derkach, S. Hassi, M.M. Malamud, and H.S.V. de Snoo, "Boundary relations and Weyl families", Trans. Amer. Math. Soc., 358 (2006), 5351–5400.

[2] V.A. Derkach, S. Hassi, M.M. Malamud, and H.S.V. de Snoo, "Boundary relations and generalized resolvents of symmetric operators", Russ. J. Math. Phys., 16, No. 1 (2009), 17–60.