

Linear Relations and the Sectoriality of Elliptic Boundary Value Problems in L^p

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Given an elliptic operator on a domain, many relevant spectral properties crucially depend on the choice of the boundary conditions. Many sufficient conditions (e.g. the Lopatinskii-Shapiro condition) are known that guarantee the sectoriality of realizations of elliptic boundary value problems in L^p -spaces.

Here, we describe boundary conditions more generally using linear relations thereby generalizing the classical setting of boundary operators. Inspired by the Krein resolvent formula used in the context of boundary triples, we determine the precise interplay between sectoriality and the choice of boundary conditions. This leads to a characterization of sectoriality in terms of the boundary conditions. This is joint work with Robert Denk and Amru Hussein.