

Spectral properties of differential operators with discontinuous coefficients and applications

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Abstract. In this paper, the spectral properties of linear operators in Banach spaces are studied. We find sufficient conditions on the structure of Banach spaces and resolvent properties that guarantee the completeness of the root elements of Schatten class operators. This approach generalizes the well-known result for operators in Hilbert spaces. In application, the boundary value problems for the abstract elliptic equation of the second order with VMO coefficients are studied. The principal part of the appropriate differential operator is not self-adjoint. The discreteness of the spectrum and completeness of the root elements of this operator is obtained.

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