Holomorphy of spectral multipliers of L^p

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Abstract

Let L be a self-adjoint operator on $L^2(X,\mu)$. A bounded function M on the spectrum of L is said to be a spectral multiplier of L^p for L, for some p in $[1,\infty)$, if the operator M(L), defined spectrally, extends from $L^2 \cap L^p(\mu)$ to a bounded operator on $L^p(\mu)$. In previous work we have shown that, when L is the Ornstein-Uhlenbeck operator, for each p in $(1,\infty) \setminus \{2\}$, there exists a sector S_p in the complex plane such that every function, bounded and holomorphic in S_p , which satisfies an appropriate condition on the boundary of S_p is a spectral multiplier of L^p for L. In this talk I shall describe some recent results on the necessity of the holomorphy condition, both for the Ornstein-Uhlenbeck operators in divergence form.

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