Martingales and L^p-estimates for the Beurling-Ahlfors operator and Lévy multipliers

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Abstract

The classical Beurling-Ahlfors singular integral operator can be represented as a martingale arising from Brownian motion. From this and the Burkholder inequalities for continuous time martingales one can obtain nearly optimal L^p estimates for $1 < p < \infty$. After reviewing some of these results we will indicate how one can obtain similar results for more general Marcinkiewicz–type multipliers by replacing the Brownian motion by a more general Levy processes and appealing to inequalities for martingales with jumps.