

From the Littlewood-Paley-Stein Inequality to the Burkholder-Gundy Inequality

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We solve a question asked by Xu about the order of optimal constants in the Littlewood-Paley-Stein inequality. This relies on a construction of a special diffusion semi-group associated with a martingale which relates the Littlewood G-function with the martingale square function pointwise. This can also be done in vector-valued and noncommutative cases.

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