

ORTHOGONAL MARTINGALES AND RIESZ TRANSFORMS

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Orthogonal martingales arise naturally while studying the probabilistic counterpart of the classical Riesz' theorem which compares the sizes of a harmonic function on the circle and its conjugate. We will introduce a general method to prove estimates for such martingales and, as application, we will show how these can be used to yield interesting sharp bounds for Riesz transforms in \mathbb{R}^d .