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THE CLUSTER SET OF $\{S_n(2nLLn)^{1/2}; n \in \mathcal{N}\}$ IN BANACH SPACES

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Abstract: Let $\{X_1, X_2, \ldots\}$ be a sequence of independent identically distributed random vectors with values in a Banach space E, weak mean zero and weak second moment. Let $S_n = X_1 + \ldots + X_n$ and let K_μ be the unit ball of the reproducing kernel Hilbert space associated with $\mu = \mathcal{L}(X_1)$. We show that for any infinie set $\mathcal{N}$ of positive integers the cluster set of $\{S_n(2n \log\log n)^{-1/2}; n \in \mathcal{N}\}$ equals almost surely αK_μ, where α satisfies $0 \leq \alpha \leq 1$ and can be determined in terms of $\mathcal{N}$ and μ by the convergence of certain series.

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