Martingale methods in the study of almost everywhere convergence of ergodic series

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Martingale methods are used to study the almost everywhere convergence of general function series $\sum a_n Z_n$, including ergodic series corresponding to $Z_n= f(T^n x)$ and dilated series corresponding to $Z_n =g(n_k x)$. Application to Davenport series completes the results of Gaposhkin. This is a joint work with Christophe Cuny.